DOCUMENT RESUME

ED 475 715 HE 035 809

AUTHOR	Yonezawa, Akiyoshi, Ed.; Kaiser, Frans, Ed.
TITLE	System-Level and Strategic Indicators for Monitoring Higher Education in the Twenty-First Century. Studies on Higher Education.
INSTITUTION	United Nations Educational, Scientific, and Cultural Organization, Bucharest (Romania). European Centre for Higher Education.
ISBN	ISBN-92-9069-172-1
PUB DATE	2003-00-00
NOTE	230p.
AVAILABLE FROM	CEPES-UNESCO, 30 Strada Stirbei-Voda, RO-70732, Bucharest, Romania ($20). Fax: 40-1-3123567; Web site: http://www.cepes.ro.
PUB TYPE	Books (010) -- Collected Works - General (020)
EDRS PRICE	EDRS Price MF01/PC10 Plus Postage.
DESCRIPTORS	*Educational Indicators; *Evaluation Methods; Foreign Countries; Futures (of Society); *Higher Education; *Program Evaluation
IDENTIFIERS	*Monitoring

ABSTRACT

Papers in this collection result from the work carried out in the context of an Invitational Roundtable on System-Level Indicators for Higher/Tertiary Education organized by the European Centre for Higher Education (UNESCO-CEPES) and the Research Institute for Higher Education of Hiroshima University, Japan. Section 1, "The Roundtable--An Overview," contains: (1) "What Was Achieved, under What Conditions, and for What Purposes?" (Akiyoshi Yonezawa and Frans Kaiser); and (2) "System-Level Indicators for Higher/Tertiary Education: Some Notes on Requirements and Use" (Frans Kaiser). Part 2, "Instructional Views," contains: (3) "Indicators of Higher Education" (Denise Lievesley); (4) "On the Uncertain Consequences of Taking Advice from Procrustes" (Guy Neave); and (5) "Indicators for Tertiary Education Reform: A World Bank Perspective" (Jamil Salmi). Part 3, "National Views," contains: (6) "The German Perspective Regarding the Design and Use of System-Level Indicators for Higher Education" (Klaus Schnitzer); (7) "Strategic Indicators for Higher Education Systems: Lessons from the French Experience" (Thierry Chevaillier); (8) "Problems Related to the Design and Use of System-Level Indicators for Higher Education in Poland" (Roman Z. Morawski); (9) "Romanian Perspectives on the Design and Use of System-Level Indicators in Higher Education" (Panaite Nica); (10) "A South African Perspective on System-Level Indicators for Higher Education" (Saleem Badat); (11) "Key Issues in the Development of Higher/Tertiary Education in China" (Hong Wei-Meng); (12) "The Japanese Perspective on the Design and Use of System-Level Indicators for Higher/Tertiary Education" (Akira Arimoto, Akiyoshi Yonesawa, Hideto Fukudome, and Masakazu Takeuchi); (13) "The Perspective of the United States Regarding System-Level Indicators for Higher Education". (Jamie P. Merisotis); (14) "Using System Indicators To Stimulate

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Policy Development" (Herb O'Heron); and (15) "An Australian Perspective on System-Level Strategic Performance Indicators for Higher Education" (Martin Hayden). Part 4, "Suggestions for the Future and Conclusions," contains: (16) "The Past and Future of Quantitative Indicators for Higher Education" (Kalus Hufner); and (17) "Suggestions Relative to the Selection of Strategic System-Level Indicators To Review the Development of Higher Education" (Richard James). Each chapter contains references. (Contains 22 figures and 12 tables.) (SLD)

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Studies on Higher Education

System-Level and Strategic Indicators for Monitoring Higher Education in the Twenty-First Century

Edited by

Akiyoshi Yonezawa
and
Frans Kaiser

Bucharest
2003

Studies on Higher Education

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ISBN 92-9069-172-1
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Preface

This volume represents a principal outcome of the work carried out in the context of the Invitational Roundtable on System-Level Indicators for Higher/Tertiary Education. This Roundtable was jointly organized by the UNESCO European Centre for Higher Education (UNESCO-CEPES) and the Research Institute for Higher Education (RIHE) of Hiroshima University. It was held from 11 to 13 June, 2001, in Hiroshima, Japan.

Before going into greater detail about the publication, a few words are appropriate with regard to the project itself. The main reasons for launching it were directly related to the outcomes of the UNESCO World Conference on Higher Education (UNESCO, Paris, 5-9 October 1998), which confirmed the need for the renewal and the re-orientation of higher education at system and institutional levels. The two basic documents of the meeting – the "World Declaration on Higher Education for the Twenty-First Century: Vision and Action", and the "Framework for Priority Action for Change and Development of Higher Education", laid down the conceptual framework, the main directions of the reform, and their governing principles. Similar documents adopted at regional level served as important inputs for the elaboration of these documents.

Additional objectives of this complex exercise include the undertaking of a thorough analysis of currently used statistical indicators, so as to evaluate their applicability to present-day higher education as well as to bring about eventual modifications or even the formulation of new indicators. All these actions are designed to improve the quantitative assessment of higher education at system and institutional levels. They were key factors in launching the project, "Strategic Indicators for Higher Education in the Twenty-First Century".

The main responsibility for the process of implementation remains with the respective Member States and their higher education institutions. UNESCO, in co-operation with other organizations and partners, is expected to follow up the developments and to monitor the implementation of the vision of higher education as presented in the above-mentioned two documents. Developments in higher/tertiary education need to be monitored at system as well as at institutional levels, because only by doing so is it possible to understand the extent to which specific recommendations advocated in the relevant documents of the 1998 World Conference on Higher Education are being implemented.

Providing UNESCO with specific reports on the development and reform of higher education in given Member States has proven to be a valid and valuable data collection method. It should be continued and applied with regard to the World Conference on Higher Education follow-up activities. However, in order to be able to reinforce policy and decision-making, there is also a need for a *quantitative*, solid system of factual reporting.

Quantitative reporting is difficult, especially at system level, because of the diversification of institutional structures as well as the impact of the new information technologies on the provision and organization of studies. To represent developments in higher education, indicators almost necessarily have to be broad aggregates that are sometimes quite crude. The task becomes even more difficult when trying to quantify the qualitative aspects which characterize in many ways the basic tasks of higher/tertiary education – teaching, learning, and research. This task represents a particular problem when ranked evaluation is being carried out (ranking/league tables)[1] or when quantitative indicators are constructed for institutional and/or programme accreditation.[2]

Collecting quantitative information on higher education systems is not a goal in itself. The information provided by indicators will be used to assess the state of a higher education system with regard to specific issues. The decision concerning the choice of indicators/issues is to a large extent a political decision. For a valid use of the indicators, it is necessary to know what the indicator is intended to measure and how the score on one indicator may be related to the scores on other indicators.

There is a risk that indicators may not represent the most important issues. They neither reflect the processes nor the operations.

The full project, "Strategic Indicators for Monitoring Higher Education in the Twenty-First Century", of which this Roundtable was a part, extends over the 2001-2003 period. It should be pointed out that its implementation was carried out in collaboration and/or with the financial support of the following organizations:

- The Ministry of Education, Culture, Sports, Science, and Technology (MEXT), Japan;
- The Research Institute for Higher Education (RIHE), of the University of Hiroshima, Hiroshima, Japan;
- The UNESCO Institute for Statistics, Montreal;
- The Division of Higher Education, UNESCO, Paris.

In addition, a number of international organizations, as well as national bodies and selected groups of experts have been involved in this project, in various ways. Its implementation was made possible thanks to financial support provided to UNESCO-CEPES by the Japanese-Funds-in-Trust for

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[1] An Invitational Roundtable on this question, titled Statistical Indicators for the Quality Assessment of Higher/Tertiary Education Institutions – Methodologies of Ranking and League Tables, was jointly organized by UNESCO-CEPES and the "Leon Koźminski" Academy of Entrepreneurship and Management, between 13-15 June 2002, in Warsaw, Poland. The report of the meeting is available on the UNESCO-CEPES Website, at <http://www.cepes.ro>. An edited version of the report along with a selection of the papers presented has been published in *Higher Education in Europe* 27 4 (2002).

[2] The first meeting of the Working Group on Indicators for Institutional and Programme Accreditation in Higher/Tertiary Education, titled *Approaches to Standards/Indicators for Institutional and Programme Accreditation in Higher/Tertiary education* was organized by UNESCO-CEPES and held on 5-6 April 2002, in Bucharest, Romania. It is to be followed by an Invitational Roundtable on *Indicators for Institutional and Programme Accreditation in Higher/Tertiary Education*, also organized by UNESCO-CEPES, to be held in Bucharest, Romania, on 3 - 6 April 2003.

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the Promotion of International Co-operation and Mutual Understanding. The German Academic Exchange Service – DAAD, offered supplementary financial assistance.

My key partner in launching the project, *Strategic Indicators for Higher Education in the Twenty-First Century*, was Isao Mizuta, currently the Director for Educational Policy of the Board of Education in Saitama Prefecture, Japan, who, at the time, was seconded to UNESCO as an Associate Expert and worked with me in the Section for Policy and Reform of Higher Education in the Division of Higher Education of UNESCO. After the return of Mr. Mizuta to his post in Japan, his successor, Ms. Satoko Imamura, became an important collaborator for the implementation of the project. I mention both persons here so as to thank them for their contributions to the project.

Jan Sadlak
Director of UNESCO-CEPES

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PART ONE

THE ROUNDTABLE – AN OVERVIEW

I. What Was Achieved, under What Conditions, and for What Purposes?

AKIYOSHI YONEZAWA and FRANS KAISER

1. INTRODUCTION

Under the rich sunshine just before the humid and hot rainy season, fifty participants from fourteen countries gathered on the City Campus of Hiroshima University, Japan to participate in the Invitational Roundtable on System-Level Indicators for Higher/Tertiary Education. Needless to say, Hiroshima is well known as a symbolic city as the result of its sudden and tragic "annihilation" on 6 August 1945. Its people respect the work of UNESCO in all its meaning. The Ministry of Education of Japan (MEXT), the Mayor of the City of Hiroshima, and many Japanese higher education researchers, including the staff members of the Research Institute for Higher Education (RIHE), welcomed the holding of this important meeting in this historic city.

Mr. Masashi Akiba of the Ministry of Education of Japan delivered a keynote address on the current status of the Japanese higher education system by making reference to various indicators. The drastic changes in the higher education system of the country and the rapid growth in data accumulation greatly impressed the participants. For some countries, the development of data is not a problem. Rather, it is one of how to deal with the rapidly expanding amount of data on higher education. This problem represents a sort of "privileged" circumstance not typical of the majority of the member states of UNESCO.

The main purpose of the Roundtable was to discuss the possible development of strategic system-level indicators, so that the UNESCO member states involved could follow up the developments and monitor the implementation of the vision of higher education presented at the World Conference on Higher Education – Higher Education in the Twenty-First Century: Vision and Action (UNESCO, Paris, 5-9 October 1998). The two main documents of the meeting (UNESCO, 1998b and 1998a), respectively, *Higher Education for the Twenty-First Century: Vision and Action* (the World Declaration on Higher Education) and the *Framework for Priority Action for Change and Development of Higher Education* (the Priority Action Plan) had been distributed as the conceptual framework, the main directions of the reform, and their governing principles.

This overview, consists of four parts. The first part is a summary of the presentations given. The second part comprises an exposé on the need for contextualization. The third part is a reflection on the discussions that took place about the requirements and the approaches used in choosing

indicators. The final part is a conclusion about where the Round Table has brought us.

2. SUMMARY OF THE CONTRIBUTIONS

2.1. Building the Framework: An International View

Prior to the holding of this Roundtable, the participants had already benefited from a comprehensive work by Abercromby and Fielden, of the Commonwealth Higher Education Management Service (CHEMIS, 2000), on UNESCO higher education indicators. The two authors implemented the detailed breakdown of the two basic documents mentioned above and drafted the list of possible indicators related to each goal and purpose. Many participants referred to this major contribution throughout the sessions.

During the first session, Frans Kaiser presented the framework of the Roundtable: what was intended and what should be discussed and, hopefully, concluded. The matter was seriously considered. It became clear that the task faced by the participants would not be simple, given the very complex context of higher education systems throughout the world.

Denise Lievesley participated in a video presentation and suggested that building systems of comparable data would be an important task of the Hiroshima Roundtable. After the discussion of development goals, the burden of data collection was mentioned. However Lievesley, rather than being pessimistic, argued that the use of priority indicators reduces the burden of data collection, and that financial, political, and institutional support for statistics is generated when they are used extensively and are seen to make a difference to the quality of policy decisions. She suggested that indicators should be: *(i)* realistic; *(ii)* measurable; *(iii)* change-oriented; *(iv)* relevant; *(v)* universal, and *(vi)* coherent. According to her, acceptable universal indicators in higher education have yet to be developed, and the world is changing very rapidly in regard to the diversification of education systems. Lievesley discussed extensively the relevance and use of indicators in the international context.

Guy Neave offered a few caveats relative to the increasing reliance on indicators, referring to "doxological drift". In the form that it takes in higher education, doxological drift involves a displacement in the function which authority imparts to indicators. In theological terms, indicators take on the task of enforcing "orthodoxy", that is, they are viewed as upholding only one interpretation of the rich and complex contexts of higher education systems. Thus, indicators become stripped of their interpretational ambiguity and, at the same time, of their tentative purposes. The caution in regard to indicators evinced by Neave is important and should be heeded when selecting indicators on higher education. For higher education has a highly complex context, and it is impossible to set a simple target. Neave's argument helps to explain one of the reasons why the participants had difficulty in proposing a fixed set of indicators, as will be shown below.

Based on the rich experience in higher education of the World Bank, Jamil Salmi addressed three issues: *(i)* Dealing with indicators is not only a technical activity, but it has an important political dimension. *(ii)* Indicators should not be viewed as threatening. *(iii)* There is pressing need to make good use of indicators for planning, management, and monitoring. Salmi also stressed the importance of asking ourselves what we want to measure and for what purpose, questions that can be as meaningful as the answers to them.

2.2. SHARING THE EXPERIENCE: THE VIEWS OF EXPERTS IN DIFFERENT NATIONAL CONTEXTS

Following the contributions offered from an international perspective, experts from different national contexts presented their views. Although these experts spoke in their personal capacities rather than as representatives of their countries or regions, the variations in their views were clearly related to the issues they are facing in their respective national and regional contexts.

WESTERN EUROPE

Western Europe has a rich context and much experience in the field of comparative higher education indicators, based on various international experiences shared through the network of EUROSTAT, INES/OECD, etc. This setting is very helpful when developing a sophisticated link between the national experiences and the development of indicators in a well-considered way.

Klaus Schnitzer attempted to analyze the impact and the relevance of indicators given the (political) context. He argued that the political context in Germany is not very clear because there are two competing paradigms shaping German higher education policy: the old state regulation paradigm and the new market regulation paradigm. Both paradigms call for different sets of indicators. In addition, the interpretation and use of an indicator may vary according to the context or paradigm, as Schnitzer illustrated, by citing the "ratio of students with academic family background to age cohort of the same background"-indicator. He proposed as a first step the reconciliation of both paradigms by the use of a portfolio presentation in which two sets of indicators would be brought together. This approach might also prove to be valuable in relating a national set of indicators to a set of indicators drawn from the UNESCO World Declaration.

Thierry Chevaillier argued that indicators at system level are sensitive to the structure of higher education systems. He described a number of trends and policies in French higher education: democratization (expansion), diversification, and professionalization, expansion of continuing education, new research funding, and internationalization. All these trends are having an impact on the conception and use of indicators at system level. Chevaillier's comprehensive discussion of the various types of indicators: financial indicators, input indicators, indicators of efficiency, indicators of

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quality, and indicators of access and equity is quite useful for understanding the current achievement and task in the development of international indicators. He argued that some broader existing indicators could be useful for more countries but that specific indicators would be needed by individual countries to keep track of policies adapted to their specific contexts.

Central and Eastern Europe

The Central and Eastern European countries also seem to be experiencing the processes of building data sets, that, in particular, are compatible with those of the Western European countries.

Roman Morawski presented a comprehensive data list of Polish higher education according to indicated tasks (so as to examine the availability and comparability of the existing data in Poland). His well-considered analysis of the possibilities for applying the data in the UNESCO perspective revealed the need to be sensitive to the costs of developing indicators that are shareable in the international context. However, it is also true that the Polish system is in transition and is facing the rapidly expanding need for international compatibility given the role of the system itself in a global society.

Panaite Nica offered an excellent description of the current situation and policy strategy of Romanian higher education. Romanians are also experiencing the transformation of a national higher education system. New laws, the establishment of advisory councils, performance evaluation, financing based on institutional agreement, decentralization of decision-making, and emphasis on autonomous institutional management appear to be the common political agenda that most of the member states are facing. Nica's well-organized consideration of the indications included in the UNESCO framework lead to important remarks regarding the future development of strategic indicators. His emphasis of the development of institutional level indicators was persuasive since he successfully demonstrated the structural diversity that each higher education system has.

Africa

Participants from three African countries: South Africa, Nigeria, and Senegal attended the Roundtable. Hamidou Nacuzou Sall of Senegal made an indispensable contribution through his presentation of the theoretical framework for the development of higher education systemic indicators. At the same time, he illustrated the existing barriers that prevent many countries (not only in Africa) from enhancing their capacities to engage in effective decision making through an accurate use of well-developed data-sets and strategic indicators.

Saleem Badat of South Africa described the use of indicators for planning purposes. Based on the rich experience of South African higher education in transition, he argued that the formulation of explicit goals and objectives is a necessary target of strategic indicators. He also stressed the need for

information systems, the capacity to process the information, and the importance of generating and interpreting indicators in a clear national strategy.

Peter Okebukola and T. Olaopa made a short presentation that began with some basic figures about Nigerian higher education. They raised three problems that higher education in Nigeria is facing, namely: *(i)* The Nigerian follow up committee of the World Conference on Higher Education is not monitoring the implementation of the Action Plan by using the indicators. *(ii)* The accumulation and publication of educational data is politicized; therefore, it is difficult to obtain accurate data. *(iii)* There is a lack of awareness of the importance of strategic indicators.

EAST ASIA

The contributions of the two participating countries from East Asia, Japan and China, reveal that both of them have been using various indicators quite strategically. At the same time, their way of using indicators is strongly oriented toward national contexts. In other words, the data accumulation was not geared towards the development of (methodologies for) indicators in the international context. Of course, their system-level indicators do not neglect international comparability; however, in the very near future, accelerated globalization as well as the internationalization of the economy and of society in this area will most likely push these countries to a more internationally-oriented, collaborative way of developing data-sets, as has already happened to some extent in the European region.

Hong-wei Meng's presentation of the development of higher/tertiary education in China with a reference to various indicators showed that quantitative indicators are utilized in a fairly effective way for monitoring the current development of the Chinese higher education system.

A team from the Research Institute on Higher Education of Hiroshima University, Akira Arimoto, Akiyoshi Yonezawa, Hideto Fukudome, and Masakazu Takeuchi, traced the historical development of system-level information on Japanese higher education. Because of the rather isolated development of its system level data set, the Japanese system is facing some difficulty in changing its indicators into an internationally comparative set. At the same time, its experience of the growing importance of qualitative indicators for short-term policy achievement offers a valuable suggestion that more attention should be devoted to how "strategy" for "strategic" indicators is set.

NORTH AMERICA AND OCEANIA

North America and Oceania should be categorized as regions that have well-developed and diversified higher education systems. This characteristic and their orientation towards decentralization and accountability to their respective societies have led to well-developed databases at institutional level. At the same time, tasks for indicating higher education performance are clearly linked to policy frameworks in these countries. These

characteristics appear to have led the presenters from these countries to make critical but constructive suggestions in order to clarify the UNESCO framework so as to "operationalize" it as a set of indicators.

Through his concise but clear-cut overview of the large multiple collection of higher education data in the United States, Jamie Merisotis pointed out that the American system is quite decentralized. He argued that it lacks integration and coordination, and because of that, it imparts a cacophony of information uses and purposes to the data it yields. He also mentioned the limited focus on international comparisons in the United States. However, Merisotis's proposal to articulate what higher education does for the purposes of policy was clearly based on the rich experience of indicating work based on the well-developed institutional-level databases in his country. Lastly, Merisotis demonstrated a very interesting conceptual framework for reflecting the benefits of higher education.

Using several indicators in an effective manner, Herb O'Heron argued that the different demographic and participation-linked pressures among the different provinces of Canada have pushed Federal Government officials to give up the idea of "one size fits all" policies. The task of "using system indicators to stimulate policy development" leads to the critical conclusion that indicators must be used with great caution, for they seldom provide evidence of cause and effect relationships. O'Heron also proposed that the primary purpose of using strategic indicators should be to help identify questions rather than to provide all the answers.

Reviewing the historical development of the use of performance indicators in Australia, Martin Hayden concludes that system-level indicators have not been developed to the same extent as institutional indicators, which in Australia are highly developed. He argued that certain comprehensive statements of purpose and goals at system level may face difficulties of measurement. His comment that the global vision of UNESCO for higher education may need to be contextualized within Member States was valuable. He also proposed that the accumulation of indicators should start with a restricted number and scope. The best available model, according to him, for such a task is *Education at a Glance* by OECD.

2.3. For Future Development

The last set of presentations contributed to a discussion on future developments.

Klaus Hüfner's contribution was a reflection on the role of indicators in the co-ordination of higher education systems. He argued that in a period of transition from centrally planned state systems to more deregulated systems in which many higher education systems are present, it would be difficult to describe a higher education system through a set of indicators. He called for the development of an analytical framework as a starting point for the construction of system-level higher education indicators. In addition to the development of system-level indicators, he believes that thought

should be given to developing regional-level or world-level indicators. Such indicators could cover the degree of globalization in higher education.

The UNESCO *Framework for Priority Action* ...presents a large number of interrelated goals. In his contribution to this volume, Richard James attempts to reduce their number and complexity by carving out four system-level priority areas on policies and policy-making frameworks: *(i)* commitment of resources; *(ii)* levels of participation; *(iii)* access and retention; and *(iv)* economic and social outcomes. Based on a substantial list of well-documented considerations, James makes a tentative suggestion for indicators in these four areas. This framework, he hopes, will stimulate a more structured discussion on the selection of strategic indicators (as the subsequent discussions prove).

In the concluding session, Motohisa Kaneko argued that an international forum is necessary for furthering discussion and sharing experiences. In his view, there is a large gap between existing available data and what is needed to serve as system-level indicators. He also referred to the issues of the changing behaviour of individual students and the rapid development of information technology.

3. THE NEED FOR CONTEXTUALIZATION

The discussion that follows indicates the importance of understanding the various contexts of system level indicators in the different countries and regions of the world.

3.1. Infrastructure

Some countries are faced with a lack or a shortage of infrastructure to collect proper information for the development indicators. At the same time, the issue of infrastructure is not always limited to the physical shortage of resources. Certain social situations such as civil war or a lack of trust among higher education institutions and government may lead to a dearth of data or to the collection of improper data sets. As Lievesley indicates, we should limit core indicators to those that are collectable in most countries.

Computing facilities and the practical availability of technical support staff for the development and maintenance of databases can also be a barrier to the collection of required data. In order to develop a data set suitable for the national or regional context, the capacity for collecting and analyzing necessary data should be built up in the respective countries and regions.

3.2. Clear Goals and Aims

Whether national governments or international communities have clear policy goals and aims, argued Badat, is a critical factor for developing and using indicators in a proper way. On the other hand, indicators themselves can certainly function as tools for clarifying the objectives and aims of policy implementation. As Schnitzer pointed out, indicators may help to clarify the

ambiguity of a policy context. The international indicators herein discussed should be developed in a similar way, keeping in mind the danger of a global doxological drift.

3.3. *Experiences for Comparison*

Experiences of placing national data in an international context are very divers among countries and regions. The Western European countries have a long history of doing so. They have developed several international databases, such as EUROSTAT and OECD-INES. The Central and Eastern European countries have tended to develop their indicators as based on the existing *de facto* "standard" data sets of the international agencies based mainly in Europe.

As Chevaillier suggested, even those countries with a rich experience of international comparison are facing a need to develop specific indicators for their national contexts. At the same time, some developing countries are feeling a crucial need to develop internationally comparable data so as to put them on the agendas of the international co-operation projects of international organizations and donor agencies.

3.4. *Need for Mutual Respect and Co-operation*

The Round Table discussion revealed the existing and significant diversity of physical, social, and cultural contexts among member states concerning the development of system level indicators for monitoring. The UNESCO World Declaration on Higher Education and the Priority Action Programme cover broad visions of member states. Indicating something, however, does not mean that standardized goals to achieve are being shared. There is a need for mutual respect in a broad and diversified global context. At the same time, the sharing of knowledge, skills, and experiences with regard to the development of appropriate indicators is the common goal. International co-operation for this purpose is, at least in principle, desirable for any and all stakeholders.

4. CHOOSING INDICATORS: REQUIREMENTS AND APPROACHES

The need for contextualizing, as described above, is a crucial criterion for the use of indicators. Particularly when these indicators are used in a supra-national context, there is clear danger of oversimplification when indicator scores are interpreted.

In the following pages, the focus shifts from the interpretation of the indicators to the process of choosing indicators. The goal of the Roundtable was to formulate a concise set of indicators for monitoring the progress of national systems towards the situation as described in the UNESCO World Declaration and the Priority Action Programme.

The question of how to go about selecting indicators was raised at the very beginning of the Roundtable. Answering that question proved to be crucial to its results.

First, this study reflects on the requirements for indicators, as listed in the Kaiser study. Most of these requirements were addressed in the contributions of the participants and the Roundtable discussions. From the same contributions and discussions, the participants learned that there were considerable differences in the ways in which they tried to achieve the goal of the Roundtable. Two approaches were discussed.

This section concludes with a set of comments on the consequences that this debate has had for the results of the Roundtable.

4.1. Requirements Reviewed

In the article by Kaiser, a list of general requirements for the selection of indicators is given. Most of the issues raised by them were addressed during the Roundtable. What were the most interesting comments, criticisms, or suggestions?

User-Related Requirements

Some of the requirements are related to the users of indicators. It may turn out that these requirements have different implications if they apply to different users. The potential users of the set of indicators identified by the participants comprise the international organizations (especially UNESCO), the national policy makers, higher education institutions, and the research community. All of these users may have a different view as to how the requirements listed may affect the choice of indicators.

An indicator should measure the phenomenon to which it refers (content validity). During the Roundtable, some progress was made regarding the proposed focus of the indicators. Some participants were invited to the Roundtable from international organizations; others came as national experts or from the higher education research community. The proceedings proved that participants from these groups had different views of the potential use of the indicators the Roundtable was set up to deliver. The participants from international organizations and the research community had a clear focus on the use of the indicators evoked in the international policy context of the UNESCO World Declaration on Higher Education. Indicators need to show what progress there is.

The national experts had a different perspective. Although many of them made an effort to relate their national experiences to the World Declaration-process, their major focus was on the national policy context. The resulting set of indicators should overlap with international indicator sets; the international set should cover important national higher education issues and developments. Schnitzer cited the need for indicators to be used with the new market paradigm in Germany. Chevaillier underlined the growing importance of lifelong learning, the ICTs, and the multiplication of stakeholders in France. Tadatoshi Akiba and Saleem Badat cited the profound structural reforms occurring in the Japanese and South African higher education systems.

The content validity of many national indicators as indicators for the World Declaration was challenged by a number of participants. Existing indicators often fall completely short in representing the World Declaration and the Priority Action Programme goals, especially regarding distribution characteristics.

Indicators should be easy to understand for all users (face validity). This requirement was not high on the agendas of participants. A few remarks were made about the face validity of "soft-quantifiable" indicators (see below).

Indicators should be relevant to the user. All efforts to develop an indicator are vain if the indicator is not used. An indicator will be used only if it focuses on a phenomenon that is considered to be important by its users. Some of the participants mentioned that the indicators should also reflect policy issues that are dominant in their national contexts. Doing so would identify the users and their priorities and would therefore be an essential step in developing a set of indicators.

The relevance not only refers to the indicators themselves but also to the effort made to develop and implement them. It is no use developing and implementing an indicator that has already been developed and implemented by somebody else. This point was brought forward in relation to the OECD indicator project. In that project (leading to the more-or-less annual publication of *Education at a Glance*), a large number of indicators has been developed. The conclusion of the Round Table was that, although there was some overlap in the financial/input indicators, the UNESCO project has a much broader scope.

Indicators should be strategic. The project calls for indicators that reflect a process of change and development in higher education systems. Indicators should portray change in a phenomenon, possibly related to the goals set for that phenomenon. Data on indicators should therefore be available for a certain period of time. This requirement was initially brought into the discussion as a rather technical criterion (indicators, like indices, should be formulated in terms of changes, rather than of steady states and absolute levels).

During the Roundtable, two new interpretations were introduced. The first was that of a focus on new developments to be captured. The World Declaration covers ground that has not before been touched by existing indicator systems. The use of the ICTs, partnerships among and between stakeholders, the brain-drain brain-gain phenomenon, lifelong learning, relevance to society, and student guidance and counseling are issues that need to be developed in the long run, but for which indicators have not yet been developed. The second interpretation was a forward-looking perspective. When placed in a framework in which indicators are linked to each other, they may also be used as a contingency planning instrument, as O'Heron explained in his contribution.

OTHER REQUIREMENTS

Indicators need to be quantitative. Although the project outline of the Round Table called for quantitative indicators, this requirement was challenged by most of the participants. It was agreed that the UNESCO World Declaration included a number of issues that are hard to quantify. The Fielden study already showed that it is impossible to quantify all issues covered in the World Declaration and the Priority Action Programme.

The conclusion reached is that qualitative information, in addition to quantitative information, is crucial for monitoring the World Declaration process.

An interesting line of discussion developed regarding the level of measurement. The use of nominal-scale indicators,[1] or ordinal-scale indicators[2] was understood by many participants as being a way to capture information beyond the scope of existing indicators. In particular, the long-term goals of the UNESCO World Declaration and the Priority Action Programme, for which policies had not yet been implemented or even developed, are difficult to capture with numbers only. Although many participants applauded the further development of such soft-quantifiable indicators, as Schnitzer called them, some critical remarks were made as well. The main criticism referred to problems in interpretation. Quantification enhances the presentation options of the information but does not always make clear what the numbers mean.

Especially in an international comparative context, the use of plain descriptive information has to be considered as an alternative.

The data underlying the indicator scores should be reliable. If a measurement is repeated, the results should be identical. Either because the discussion focused on what to measure, or because the issue was overly technical, this requirement did not provoke any significant discussion.

Indicators should produce information that is up-to-date (timely). In practice, this condition seems hard to meet. In a number of contributions, problems with timeliness were reported. The time-lag between the event and the availability of data on that event is relatively long, which, as Merisotis pointed out, may distort the judgments of policymakers when deciding on action.

Collecting data and calculating indicators that meet all requirements listed has to be feasible. This requirement refers to the costs of collecting data and of calculating indicators, as well as to capacity and time. This criterion played an essential role in many contributions. It was the main reason why presenters proposed to use existing data and to avoid the development of new indicators. Abercromby and Fielden (2001) mentioned that collecting data for all elements of the World Declaration Vision is in principle possible.

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[1] Calculations based on nominal-scale indicators cannot be used to generate ranking. An example of such an indicator is that of a score of "1" representing a staff development policy that has been adopted and of "0" indicating that no such policy has been adopted.

[2] The scores can be ranked, but calculations are not permitted.

However, for a substantial part of the Declaration, this task would require much time and the collection of new data at relatively high costs. In many UNESCO countries, it is not only the cost of developing new indicators and of collecting information that are the main barriers to feasibility. As Badat pointed out, in many countries the capacity to collect (new) data is very limited.

Indicators should not be used in isolation. Each indicator points at only a part of the phenomenon at hand. The combined information may provide a true image of the phenomenon.

The quest for the ultimate indicator, one representing a social phenomenon in a single score, was given up a long time ago. The complexity of processes like the UNESCO World Declaration on Higher Education process calls for a (large) number of indicators, each describing a part of a given social phenomenon. The value of such a collection of indicators will increase considerably if an effort is made to relate them to each other. Drafting and using a framework, even it is not a causal one, is crucial for interpreting the scores on the indicators. Using an indicator-score without knowing what part of the process it refers to will very likely lead to a misinterpretation of that particular score.

A conceptual framework may also help in choosing indicators. In his contribution, Merisotis covers a framework to identify possible blind spots and overlapping in the list of indicators. His analysis is driven by a classification of benefits of higher education, either public or private, or economic or social. The grid drawn by this classification may be used to assess the completeness of indicator systems. James uses a framework for similar reasons. The input-process output model he uses is condensed from the Priority Action Programme. A causal framework may also help to identify the crucial indicators for future development, as is proposed by O'Heron.

The need for a conceptual framework was felt by most of the participants, but none of the frameworks presented demonstrated in an explicit and convincing way how indicators are related to each other. Partly this result may be due to the *ad-hoc* and unsystematic ways in which policy makers set the stage for indicator systems. It may be partly due to the lack of knowledge of the relations among the various phenomena.

4.2. Two Approaches

How to choose indicators? Clearly there is no standard answer to this question. Certain classifications as to what influences the choice of indicators exist in the literature or educational indicators. Nuttal (1994) distinguishes three forces: *(i)* policy considerations; *(ii)* scientific/technical issues; and *(iii)* practical considerations. Policy considerations set the stage for the selection process: they determine the rationale for the set of indicators. Policy considerations also set a focus on the use of policy instruments. Indicators should give a clue as to what instruments may work or have worked.

Because of this instrumental focus, Nuttal (1994) links policy considerations to a modeling approach. For knowing what may work and what will not, it is important to have some kind of model in which the indicators (or better, the phenomena they point to) are related to each other. Although such models are not yet very well developed, they are crucial for the interpretation of indicator-scores.

The second force, scientific/technical considerations, focuses on issues of validity and reliability. Is it possible to translate the social phenomena that one wishes to study into measurable terms, and can one collect the appropriate data for doing so? These questions seem to be straightforward, and their answers are crucial for the creation of a certain confidence on the part of the users in the indicators. Without such confidence, the indicators will not be used for long.

The third type of consideration is that of practical considerations. Feasibility and timeliness are the keywords. It is no use developing a set of sophisticated indicators for which data cannot be collected or only at high costs. Indicators need to give up-to-date information since most users are interested in the current or recent situation.

In practice, a mix of these types of considerations is used. However, very early at the Roundtable, two more or less distinct approaches emerged, each with its own mix of considerations. The first approach is called the *synoptic* or *conceptual* approach. The primary focus is on the phenomena to be represented. How can the processes leading to the realization of the World Declaration Vision be best measured? There is the strong influence of the policy considerations and the scientific/technical issues. The second approach can be called the practical approach. The major concern here is feasibility considerations. In a way, this approach starts at the other end: from the data available. The central question is how the available data can be rearranged and reinterpreted in such a way that they best represent the World Declaration process. Among the "followers" of the practical approach there was an urge to have some tangible results that they could take home with them; a list of indicators they could use in monitoring national progress towards the vision reflected by the UNESCO World Declaration. Table 1 below indicates in a tentative way the relative weights that the conditions discussed in the section above have in regard to the two approaches.

Table 1. Tentative weighting of selection criteria by basic approach

	Synoptic/Conceptual	Practical
Quantitative		
Content validity	++	
Face validity	+	
Reliability	+	+
Set of indicators	++	
Timeliness		++
Feasibility		++
Strategic	++	
Relevance to the user		+

As mentioned above, there is no clear-cut distinction between the two approaches. However, the distinction may help in understanding the outcome of the Roundtable. Among the participants, there were partisans of both approaches. Both groups were convinced that "their" approach would contribute to the achievement of the goals of the Roundtable. But the approaches do not mix. They are like counteracting forces, keeping each other from achieving a solution.

5. CONCLUSION

The participants in the Roundtable were a heterogeneous group of experts in the field of higher education and its indicators – heterogeneous in a number of ways. They had different affiliations. They ranged from international civil servants, to national experts, to members of the higher education research community. Many had multiple affiliations. Participants varied in the approach they used in choosing indicators, ranging from a synoptic and conceptual approach to an approach driven by practical considerations. In addition, all the participants came from different cultural and social backgrounds. Their experiences and expertise were formed in those contexts. The indicators were going to be used in equally different contexts.

Given this multiple layered heterogeneity, the Roundtable was a success. It did not produce a concise set of indicators for monitoring the UNESCO World Declaration on Higher Education process, as had been envisaged in the project outline. It did however touch upon a large number of issues and considerations that had to be taken into account when selecting a set of higher education indicators. The rich discussions may prove to have been stimulating for those at the national level who have to select and to use the indicators. The results of the Roundtable may feed into the discussions taking place between the various users of the indicators, discussions that are essential for their proper and continued use.

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II. System-Level Indicators for Higher/Tertiary Education: Some Notes on Requirements and Use

FRANS KAISER

1. THE PROJECT

"There is a need for [a] qualitative, solid system of fact-reporting, even in cases of daunting tasks, to quantify intangibles of a set of complex teaching, learning, and research phenomena and the administration, functioning, and financing of higher education" (UNESCO, 1999).

The Roundtable on Strategic System-Level Indicators on Higher Education that was held in Hiroshima, Japan, from 11 to 15 June 2001, should be seen as a step towards such a system of factual reporting. This article intends to summarize the main requirements that indicators must meet and to present them in the context of the theme of the conference.

2. INDICATORS

There is no single authoritative definition of what an indicator is. Johnstone (1981, p. 3) described an indicator rather vaguely as "something that conveys a general impression with more or less precision – something that gives a broad indication of the state of the situation investigated".

The discussion as to the nature of an indicator is further complicated by the introduction of "performance indicators". Cave defines performance indicator as "a measure – usually in a quantitative form – of an aspect of an activity of a higher education institution. The measure may be either ordinal or cardinal, absolute or comparative. It thus includes the mechanical applications of formulae and can inform, and be derived from, such informal and subjective procedures as peer evaluations or reputational rankings" (Cave *et al.*, 1997, p. 24). What distinguishes a performance indicator from an "ordinary" indicator is that the former is used as an assessment of goal-attainment.

Strategic indicators are another class of indicators. Since the project documents did not specify "strategic", this author used his own characterization. Strategic indicators are prospective. They focus on core goals set for the system.

The term, "prospective", is used to indicate that the strategic indicator must inform the user as to where the system may be in the future. How to do that? First a strategic indicator should be change-oriented. Indicators should identify trends. Using the assumption that trends will continue, insights into the possible future situation may be generated. Furthermore,

we can use causal chains or flow patterns to "look into the future". If an indicator refers to characteristics that appear early in the causal chain or flow, it may indicate the levels of the characteristics at the end of the causal chain or flow in the future. An increase in the number of new entrants in year t may indicate that the level of graduates may rise in $t + x$ (x being the average time for completion of the programme).

The second characteristic is the orientation on *core goals*. In choosing strategic indicators, one should ask whether or not this indicator has a high impact on reaching the core goals, as set, for example, in the UNESCO World Conference on Higher Education (1998a).

3. REQUIREMENTS

In the literature on (educational) indicators, there is a long list of criteria that indicators have to meet. These criteria refer not only to the practical or technical aspects of indicators. The fact that indicators have to be used brings in political (or more generally, normative) considerations regarding the choice and presentation of indicators. For the purposes of this roundtable, the following criteria were proposed:

- *Quantitative*: The project outline calls for quantitative information. Thus, the phenomena to be indicated should be quantifiable; however, not all the indicators have to be measured as ratios. As Cave stated, measurement can also be on interval or ordinal scales. The latter scales will be used frequently whenever the "intangibles" mentioned in the *World Declaration* (like cultural aspects) are to be quantified.
- *Content validity:* The indicator should measure the phenomenon to which it refers. Content validity is a crucial requirement. It is also difficult to meet, especially reading indicators that refer to broad or "intangible" phenomena (as can be found manifold in *Higher Education in the Twenty-First Century...* and the *Framework for Priority Action....* (UNESCO, 1998b). The fact that indicators are used in international comparisons complicates the quest for content validity. Indeed, does an indicator mean the same in all countries being compared?
- *Face validity:* In addition to having a good content validity, an indicator should also be easy to understand for all users. The use of complicated formulae to calculate an indicator-value is not very helpful in obtaining good face-validity.
- *Reliability:* The data underlying indicator scores should be reliable. If a measurement is repeated, the results should be identical.
- *Sets of indicators:* A crucial element in the discussion on interpretation was that indicators should not be used in isolation. Indicators point to different aspects of a certain phenomenon. The combined information may provide a true image of the phenomenon. In the choice of indicators, one has to make sure that all relevant

aspects are covered. To combine the information conveyed by indicators, a map of the relations among them is needed. Whether this mapping is a causal model or merely a presentation of the stocks and flows like the input-process-output model is not of prime interest, as long as relations are made explicit. Redundancy within a set of indicators should be avoided. If two indicators are strongly related to each other, the elimination of one of them should be considered.

- *Timeliness:* Indicators should produce information that is up-to-date. For many statistics, the time between the event and the availability of data on that event is relatively long (three to four years). Such time lags may distort the judgment of policy-makers, when deciding on action.
- *Feasibility:* Collecting data and calculating indicators that meet all requirements listed have to be feasible. Feasibility refers to the costs of collecting data and of calculating indicators, as well as to capacity and time.
- *Strategic:* The project calls for indicators that reflect a process of change and development of higher education systems. Thus, indicators should indicate change in a phenomenon, possibly related to the goals set for that phenomenon. Data on indicators should therefore be available for a certain period of time. Throughout that period, there should be no changes in definitions in data-collection or indicator-definition.
- *Relevance to the user:* All efforts to develop an indicator are in vain if the indicator is not used. An indicator will be used only if it focuses on a phenomenon that is considered to be important by its users. Identifying the users and their priorities is therefore an essential step in developing a set of indicators.

Not all of the requirements listed above are fully compatible with each other. Validity, timeliness, and feasibility may not be maximized all together. Trade-offs between requirements have to be made.

4. INDICATORS FOR WHAT?

The vision of higher education as formulated in *Higher Education in the Twenty-First* Century comprises eight elements:

i. equity of access;
ii. enhancing the participation and promoting the role of women;
iii. advancing knowledge through research in science, the arts, and the humanities and the dissemination of results;
iv. a long-term orientation based on relevance;
v. strengthening co-operation with the world of work in analyzing and anticipating societal needs;
vi. diversification for enhanced equity and opportunity;
vii. innovative educational approaches;
viii. higher education personnel and students as major actors.

To achieve this vision, a large number of actions is brought forward. These actions refer to:

- qualitative evaluation;
- the potential and the challenge of technology;
- the strengthening of higher education management and financing;
- the financing of higher education as a public service;
- the sharing of knowledge and of know-how across borders;
- the movement from brain-drain to brain-gain;
- partnership and alliances.

Most of the issues mentioned above require further systematic use. The tasks involved will lead to a proliferation of indicators. Developing a short list of indicators that conveys a sense of completeness then becomes a formidable task.

The meeting was focused on the level of the system. In *Higher Education in the Twenty-First* Century (UNESCO, 1998a) and the *Framework for Priority Action* (UNESCO, 1998b) an additional level is mentioned very frequently, the institutional level. Limiting the scope of the meeting to the system level results led to substantial reductions in the goals or actions to be indicated. However, since the system-level and the institutional level are related to each other, the institutional level and its indicators should be kept in mind when discussing indicators at system level.

5. CLOSING REMARKS

By publishing this study on strategic indicators, UNESCO-CEPES is contributing to a better knowledge of the subject. Based on this information, the policymakers and/or other stakeholders may decide to take action, either by making or implementing a policy-instrument or by looking into the issue further. However, indicators are an aid to expert judgement, not its replacement.

Although policymakers play a crucial role in higher education policy, they are not the only audience of the project. Other stakeholders, like higher education institutions, students, and the general public should be informed about the progress made regarding the goals set in *Higher Education in the Twenty-First Century*. They must be taken in consideration when presenting the indicator scores.

Owing to the dynamic and complex character of the higher education field, indicator results should not be used in a mechanical way. They should be used to start discussions with the relevant actors and stakeholders in the field.

The issues raised above do not represent a limiting list of issues and problems related to the choices of strategic indicators for the development of higher education. Although a great deal of work has been done (Abercromby and Fielden, 2000), the challenge to condense the information into a set of indicators in such a way that all stakeholders may and will use the set

remains a formidable one. The set should be used as a tool to assess how a higher education system is doing on its way to the new vision.

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PART TWO

INTERNATIONAL VIEWS

III. Indicators of Higher Education[1]

DENISE LIEVESLEY

1. INTRODUCTION

This study explores how statisticians can exploit their skills and expertise effectively to ensure that data collected internationally on higher education can assist the development of effective policies in this area.

International statisticians are faced with dilemmas in their attempts to collect data on higher education, wishing to raise consciousness of the role of statisticians employed in an international context, to explain some of the constraints under which they work, and to address the principles which ought to govern their work.

This study will concentrate on cross-nationally comparable data. Many countries of the world have yet to develop nationally relevant systems of data collection on higher education. With a view to building systems of comparable data, special problems occur in the process of collecting data in some of the poorest countries of the world. The context and a framework for the collection and interpretation of the data are further presented.

2. THE INTERNATIONAL CONTEXT

2.1. The Scale of the Development Problem

Economic and social gains over the last half-century mean that some people enjoy a standard of living far superior to that experienced in the past. Yet many people remain desperately poor. Half of the population of the world still has to manage on less than $2 a day, and 1.2 billion, on less than $1. Unless efforts are increased and co-ordinated, the situation will deteriorate. The population of the world recently reached 6 billion, having quadrupled since the beginning of the Twentieth Century, and is forecast to reach 8 billion by 2025, with almost all of the additional people living in the very poorest countries. Currently, eight out of ten people live in the less developed countries where fertility rates range from 5.6 children per woman in sub-Saharan Africa, through 4.5 in the Arab States and North Africa, to 2.9 in Latin America and the Caribbean. Some 113 million children have no access to schooling, and 880 million people, two thirds of them women, are illiterate.

The latest estimates from UNAIDS of the impact of the AIDS pandemic are horrifying: at the end of 2000 there were estimated to be 36.1 million people living with HIV/AIDS, of which 5.3 million were new infections over

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[1] This paper has drawn heavily on material used by the author in preparing the Presidential Address for the Royal Statistical Society (see. *RSS*. Series A. forthcoming).

the previous year. AIDS, a disease predominantly of the poor, deepens and spreads poverty. Some 96 percent of the people infected live in the developing world, 70 percent in sub-Saharan Africa. Worldwide, it is estimated that by the end of 1999 AIDS had orphaned 13.2 million children under the age of 15, of whom 12.1 million were living in sub-Saharan Africa, compared with 9,000 in Western Europe. Such children are much less likely to go to school and are more likely to be malnourished than non-orphans. Will they be able to escape poverty? According to the World Health Report (WHO, 2000), AIDS caused 20.6 percent of all deaths in Africa in 1999, twice the percentage of any other single cause.

These few statistics illustrate the magnitude of the inequalities that the world faces.

Although the extent of this poverty seems to be insurmountable, these figures should be viewed against a background of almost unbridled expenditure on weapons and consumer inessentials by developed countries.

- Since 1945, an estimated $8 trillion (USD) has been spent on nuclear weapons worldwide, but the estimated public expenditure on education represents less than 0.5 percent of this sum.
- According to some estimates, the world would need to spend an additional $7 billion (USD) a year to provide primary education for those children not currently in school. This sum is less than the amount spent annually on cosmetics in the United States or on ice cream in Europe.
- The price of one ballistic submarine ($1,453 million USD) would double the education budgets of eighteen poor countries, with 129 million children to educate.

2.2. Governance

What is meant by "governance" when applied to the international realm? What are some of its desirable attributes if the aim is to manage successfully the transition from an international to a global world? These are questions addressed by the Secretary-General of the United Nations in his report to the Millennium Assembly (Annan, 2000). He argued that for the good of people throughout the world and for the sake of our common aims, we must help to strengthen the capacity of individual states to govern effectively and help them, in our "fluid, highly dynamic, and extensively networked world", to develop a deeper awareness of their dual role in the global world. This duality recognizes that each state not only bears responsibilities in relation to its own people, but also collectively shares responsibility for the whole planet. The thrust of the Secretary-General's report was that decision-making structures through which governance is exercised internationally must reflect the broad realities of our times.

> "Better governance means greater participation coupled with accountability. Therefore, the international public domain – including the United Nations – must be opened up further to the participation of

the many actors whose contributions are essential to managing the path of globalization".

This conclusion led him to argue that the more integrated global context demands a new degree of policy coherence, and he regretted that formal institutional arrangements often lacked the scope, speed, and informational capacity to keep up with the rapidly changing global agenda.

2.3. Globalization

Globalization is often hailed as offering the solution to disparities, and in some countries, it has indeed brought about rapid economic growth with associated rises in living standards. However, these advances have been restricted to relatively few countries and have been distributed unevenly within them.

Globalization is changing the way we live and work with each other, a situation that is resulting in increased interdependence. Although globalization is a universal phenomenon, its consequences are not the same across the world. When viewed as a carrier of values, cultures, and ways of life, it may be viewed as another form of colonization and can result in the loss of national traditions and uniqueness.

The effects of globalization (such as increased mobility, the exploitation of information and communications technologies for distance learning, etc.) call into question the continued relevance of national boundaries for many of the processes studied by the international statistician.

> "Probably the best answer to the challenge globalization puts to statistical offices is to do what companies do: they form all kinds of world-wide alliances and re-distribute tasks among the constituent partners in order to save costs and to increase productivity, we should follow suit and think much more seriously about an international network of NSIs [national statistical institutes], national central banks, and international statistical offices, which collect the data where it is most appropriate, share the information with each other, and perhaps specialize in accordance with local circumstances and expertise" (Keuning, 2000).

Is this way of proceeding correct? Is the pooling of nationally gathered data the right strategy, or is a radical reappraisal of the international statistical system required for obtaining a more comprehensive global picture? Do we over-emphasize the national?

2.4. The Information and Communications Technologies

Alongside globalization, the increasing penetration of information and communications technologies (the ICT's) is also presented as a means of reducing inequities. Indeed, as the example of India shows, ICT can generate employment and wealth within a developing country, provided that there is foreign investment, economic liberalization, and a pool of technically

educated people. However, ICT can only deliver benefits if an adequate telecommunications infrastructure is available and if people have access to equipment and training. Fewer than 6 percent of people worldwide own a computer, and there are more computers in the United States than in the rest of the world put together. Some 94 percent of all Internet users live in the 40 richest countries, and 30 percent of Internet users have a university degree. It would cost the average Bangladeshi more than eight years of income to purchase a computer compared with one month of salary for the average American. There are more telephones in Tokyo than in the whole of Africa, and more than half of the people in the world have yet to make a first telephone call.

For developing countries, which are always characterized by a shortage of trained teachers (a problem exacerbated in some countries by the ravages of AIDS on the teaching profession – in Zambia the mortality rate amongst teachers is over 70 percent higher than among the general population, 1,331 teachers having died of AIDS in 1998 thus putting a great strain on the education system), new modalities must be sought to overcome deficiencies in the provisioning and quality of education. In this context, the ICTs are important not only as a means of linking the underprivileged to the global economy but also as a means of delivering education to them. As the Assistant Director-General of UNESCO for Education, Sir John Daniel, has written:

> I see the trend towards open-source courseware as extremely helpful to institutions in the developing world. Good distance learning material, whether delivered on the Web or through other media, is expensive to develop. It would be tragic if, through excessive royalties for its use, courseware became another area where there is a net flow of wealth from the poor world to the rich world. Open-source courseware will help to bridge the digital divide and bring the day closer when all the world's population can exercise their human right to an education (Daniel, 2001).

Initiatives taken by the Massachusetts Institute of Technology (MIT) in the USA to put its course material in the public arena may result in a wave of developments in this area. As ICT forges new ways of delivering higher education, it becomes necessary to rethink the statistical measures used to capture data on access, participation, and achievement.

3. DEVELOPMENT GOALS

In 1995, development ministers from the member countries of the OECD Development Assistance Committee (DAC) determined to review past experiences and the planning of policies into the next century. The resulting report, *Shaping the 21st Century: the Contribution of Development Co-operation* (OECD, 1996) included seven specific goals, which have become known as *the* international development goals, and argued that their achievement would be of profound significance for future generations. The

goals were drawn from a series of United Nations conferences on key themes: education (Jomtien, 1990), children (New York, 1990), the environment and development (Rio de Janeiro, 1992), population and development (Cairo, 1994), social development (Copenhagen, 1995), and women (Beijing, 1995). The seven, however, are only a subset of the goals about which agreement was reached at these other conferences.

The international development goals have been endorsed by seventy-seven African, Caribbean, and Pacific countries as part of the Cotonou agreement[2] and by OECD/DAC, the World Bank, and the IMF.

In September 2000, 149 heads of state at the United Nations Millennium Summit endorsed the Millennium Declaration (UN, 2000a) which includes a set of goals which closely resemble the international development goals. However, there are some key differences relating to the exclusion of a reproductive health goal (as a result of very difficult negotiations lasting nearly a month), the inclusion of a goal concerning disease (aimed at halting and then reversing the spread of HIV/AIDS, malaria, and other diseases by the year 2015), and another relating to "cities without slums" (aimed at achieving "a significant improvement in the lives of 100 million slum dwellers by 2020"). These are known as the Millennium Declaration Goals.

The Millennium Declaration also has a number of other resolutions that are framed as goals. However, not all of them are easily turned into measurable targets, *e.g.*, "to provide special assistance to children orphaned by HIV/AIDS", "to develop strong partnerships with the private sector", "to implement strategies that give young people everywhere a real chance to find decent and productive work", and "to encourage the pharmaceutical industry to make drugs more widely available".

Discussing development goals, even when they do not yet address issues of higher education, is needed because the goals are increasingly being turned into indicators which are then used for drivers of statistical systems. In order to increase the emphasis on higher education, higher education must get itself included in these agendas.

Concerns are often expressed about the burden of data collection upon countries, and the implication drawn that the use of priority indicators reduces this burden. Certainly international agencies should be moderate in their requests for data. They should consult extensively with countries and should provide justification for their requests. Stressing the disadvantages of data collection (the burden), rather than the value of the data, creates a vicious spiral. Experience shows that financial, political, and institutional support for statistics is generated when they are used extensively and are seen to make a difference in regard to the quality of policy decisions. Under these circumstances, users both inside and outside Government, will be important and persuasive allies in the fight for their continued collection.

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[2] See <http://europa.eu.int/comm/development/cotonou/agreement_en.htm>.

4. DEVELOPMENT INDICATORS

4.1. Translating Goals into Indicators

Considerable work has taken place in a variety of different fora to translate development goals into indicators. At a specific level, much of this work has been carried out within specialized agencies of the United Nations. In addition to sets of indicators developed in response to specific World Conferences, other sets have been created for particular publications such as the various World Reports including the influential Human Development Report of the United Nations Development Programme.

Some efforts at developing a cohesive set of indicators should be noted.

4.2. A Common Framework for Indicators

At a more general level, the United Nations is developing a common framework for development assistance, known as the United Nations Development Assistance Framework (UNDAF). UNDAF incorporates a review of the measures to translate the commitments made by countries at global conferences into country level action plans following consultations on national priorities, the identification of key indicators and data collection, and implementation, monitoring, and evaluation. Thus, a set of "common country assessment indicators" has been developed.

In addition, the United Nations Statistical Commission has developed a Minimum National Social Data Set to provide a focus for achieving a manageable set of core indicators of progress in social development.

The foregoing attempts to make some sense of this maze of indicator initiatives, but it is not surprising that the Economic and Social Council of the United Nations requested that a committee be established to address concerns about the proliferation of statistical indicators and the demands that this proliferation was placing upon national statistical systems. The report of the council argues for a coherent set of priority indicators. In addition, in March 2001, the United Nations Statistical Commission set up a "friends of the chair" group, under the leadership of Professor Tim Holt, to examine different indicator sets and to make recommendations on consolidation and co-ordination. However, there are some who believe that the problem of inconsistencies among sets of indicators would be solved if only everybody were to rally behind the Millennium goals and to use these to determine a definitive set of indicators, which do not include goals on higher education.

4.3. How Important Are Indicators?

The high level political significance attached to various international goals is to be welcomed by statisticians and can hopefully be turned to the advantage of weak statistical systems throughout the world. And we need to acknowledge that there are many weak statistical systems. Since the batteries of indicators are dependent upon achieving responses from as many countries as possible, with keen attention being paid to the poorest

countries, the gaps in data can be highlighted and resources sought to assist those countries in collecting the relevant data. The data are certainly very powerful for advocacy purposes and enable the international community to co-ordinate actions. In addition the targets can be very useful for purposes of accountability.

Whilst recognizing the value of indicators and warmly welcoming initiatives to reduce the multiple sets of indicators into a priority selection, they should not be regarded as encapsulating the whole contribution of statistics. The dangers are twofold:

First, indicators should not have more meaning imparted to them than is justified by their content. Mark Malloch-Brown might have fallen into this trap, when he noted that,

> In Brazil, President Cardoso has targeted a $7.4 bm anti-poverty programme at the 14 states with the lowest Human Development Index. In Madyha Pradesh, India, the chief minister, Digvijay Singh, recently described to me how he governs by his human development index (Malloch-Brown, 2001).

Second, to reduce the role of statistics to mere monitoring and advocacy is to ignore their value in formulating evidence-based policies. Work on indicators should therefore be complemented by support for statisticians to develop rich databases about the state of societies at a fundamental level. There is an impression that the priority indicators are the only statistical outputs a country needs even for its own governance. A report by the World Bank task force on higher education in developing countries recommended in 2000 that,

> Each developing country make it a national priority to debate and determine what it can realistically expect its higher education system to deliver. The debate must be informed by historical and comparative knowledge about the contribution to social, economic, and political development – but should also take account of the challenges the future will bring. It should establish for each higher education system clear goals that policymakers can use to view the higher education system as a whole, determining what each part can contribute to the public good.
>
> This kind of holistic analysis of higher education systems has rarely been attempted. It does not mean reverting to centrally planned systems – far from it. Instead it offers the ability to balance strategic direction with the diversity now found in higher education systems across the world (The World Bank, 2000).

4.4. Attributes of Indicators

Goals chosen without any reference to their measurability or other attributes are often, through the mechanism of World Conferences,

endorsed by countries before statisticians have had an opportunity to question their characteristics as follows:

- Are they realistic?
- Can they be measured?
- Will they show sufficient change over time to be valuable as yardsticks?
- Are relevant benchmarks in place?
- Are they universal, and do they make sense in different parts of the world?
- Are they coherent with what has been used before?

After such "declarations", goals cannot easily be changed. Sometimes the translation of goals into indicators is not viewed as a statistical process at all – statisticians being perceived simply as technicians who take indicators as given and organize the data collection but do not have any relevant expertise with respect to the creation, determination, or definition of indicators. Too rarely is there recognition that conceptual development and fieldwork are needed to develop reliable indicators. Since indicators are often expressed in terms of change over time (*e.g.*, halving adult illiteracy), the unquestioned assumption that there are adequate baseline data can be very problematic.

The selection of appropriate goals is critical since, ideally, they should be realistic and achievable. It has been proposed that countries should be stretched to achieve them, but if goals are too difficult to achieve and are thus not achieved, the result is detrimental, as it perpetuates a sense of failure. It is not easy to see how such goal achievement can be managed with a set of identical indicators for all countries of the world, which are of course at very different stages of development. Skeptics of the development indicators programme often cite the fact that indicators have been produced as a result of World Conferences over many years and that all the targets have consistently been missed.

Because of the need to collect the same data for all (or a large group of) countries, the indicators must reflect the lowest common denominator. However, inertia in the system, together with anxiety that no changes should be made to the agreed set of indicators, has an unfortunate consequence in that countries are not allowed to grow in their statistical expertise. Such inertia can dissuade countries from developing new indicators and entrench the selection made at a particular point in time. Incidentally, changing an indicator is often confused with "changing the goal posts" even though the indicator may have been a very inadequate proxy for the goal. This perception is particularly acute in relation to higher education for which acceptable universal indicators have yet to be developed, and the world is changing very rapidly in regard to the diversification of education systems.

4.5. Presentation and Use of Indicators

How indicators are presented can be a cause for concern. They are often stripped of their essential meta-data, which countries and agencies have been at great pains to collect and which are essential for informed use. One cannot make sound use of data without having a good understanding of the political, economic, and social context of the given country. Many indicators are defined as ratios with the numerator and denominator coming from different sources and even from different agencies within countries. This way of presenting can result in incompatibilities in the data and significant errors in the resulting indicators. Moreover a change to either the numerator or denominator (which can happen when a Census is carried out, for example) can mean that the indicator changes markedly owing only to measurement error.

A significant rise in the use of performance indicators in higher education has been noted. Such indicators have a number of purposes:

- to provide more reliable information on the nature and performance of higher education;
- to allow comparisons to be made between individual institutions;
- to enable institutions to benchmark their own performances;
- to inform policy;
- to contribute to the public accountability of higher education.

Unfortunately, indicators can easily be fed into league tables. Such tables are prone to misinterpretation resulting from the lack of appropriate contextualization of outcome indicators, inadequate specification of the statistical models, and conceptual problems in devising measures of "value added", the fact that the "value added" is assumed to be meaningful despite the fact that input and output data are often measured in different units, and the failure to take account of uncertainties in the data.

Increasingly, indicators at country level are being used in league tables, too. The media triumph of the UNDP Human Development Index has encouraged other agencies to create league tables with their own selections of indicators. However, in such international league tables, data from very different countries are incorrectly assumed to be of equivalent quality, and key indicators may be manipulated or withheld by countries to alter their rankings with detrimental effects on the quality of the data (a problem which is especially acute when a high level of attention is given to particular league tables). Furthermore, such league tables sometimes use composite indicators that have been created by combining data across totally different topics. Whether or not the creation of these league tables is a statistical exercise is debatable; however, the fact is that it is widely perceived as such, and this perception can affect the ability of statisticians to establish credibility for data. International statisticians have sometimes been reluctant to elaborate on the limitations of league tables because they can see that the media and the political attention given to league tables raise the profile of development.

Even though nations are of widely varying sizes, and many of them have very decentralized decision-making, the emphasis is mostly on indicators at the national level, implying that the nation is the only relevant unit of analysis. This approach persists despite the fact that many decisions are made at sub-national level and that wide variations exist across many countries. The focus on nations concentrates on totals or averages, whereas it is often the distribution within countries that is of interest. Inequality in the world is badly under-estimated through an over-emphasis on national data.

However imperfect they may be at reflecting goals for development, indicators have gained credence, and the fact that they are inevitably an over-simplification gets conveniently forgotten. Any issue, which is not measured by an indicator, is seen as unimportant, and conversely, any issue with an associated indicator is automatically assumed to be important.

Economists have come to feel
What can't be measured isn't real.
The truth is always an amount
Count numbers, only numbers count.

Indeed among the most debilitating characteristics of life in deprived situations is a loss of dignity which affects the capacity to escape from the cycle of deprivation, but is not susceptible to quantification.

5. INTERNATIONAL COMPARABILITY

5.1. Purposes of Comparability

A significant issue that the "Roundtable on System-Level Indicators for Tertiary/Higher Education" addressed was the fostering of the collection of comparable data across nations, the main objectives being:

- To enable countries to gain a greater understanding of their own situation by comparing themselves with others, thus learning from one another and sharing good practice. "They (cross-national measures) help to reveal not only intriguing differences between countries and cultures, but also aspects of one's own country and culture that would be difficult or impossible to detect from domestic data alone".
- To permit the aggregation of data across countries to provide a global picture, thus enabling the design of international initiatives informed by evidence.
- To provide information for purposes of the accountability of nations and for the assessment, development, and monitoring of supra-national policies.

Although collecting comparable data is difficult, the measurement problems encountered are not a sufficient reason for abandoning cross-

national research. The importance of the latter is growing owing to globalization and moves towards cross-national governance. Instead, we must argue for circumspection in the analysis of comparable data and a resistance to drawing "heroic conclusions on the basis of unexpected national variations in the answers to a single question." Jowell (1998) outlines a number of practical rules for mitigating some of the problems in relation to comparative research: "Social scientists should undertake not to interpret data relating to a country about which they know little or nothing". "Analysts of cross-national data should resist the temptation to compare too many countries at once". And "Cross-national surveys should ideally be confined to the smallest number of countries consistent with their aims". On the other hand, the call to analyze data whilst taking account of the appropriate context, to provide access to full methodological information for each nation, and to suspend belief in any major country differences discovered before determining whether they result from differences in methodology or the interpretation of methodology are all very important lessons for international statisticians. As Jowell points out, all "quantitative surveys depend for their reliability on a sort of principle of equality or equivalence", and thus the problems are not unique to cross-national studies.

5.2. Models for Achieving Comparability

There are substantially different models of collection of cross-national data. These include:

- *the (fortunately discredited) "safari method"*, whereby international researchers visit countries to collect the data they need, withdraw the data to an industrialized country, and analyze it there with limited appreciation of the context of the data;
- *the collaborative model*, as exemplified by the International Social Survey Programme, in which a research team comprising participants from all the countries jointly design the key aspects of the study;
- *pre-collection harmonization*, whereby representatives of the countries are consulted to resolve differences in their methodologies in advance of the data collection, and the work is mediated by an international or regional statistical agency (this model is employed by EUROSTAT in relation to much of the cross-European data);
- *post-hoc harmonization*, in which countries collect data independently, with the data being later re-analyzed in the light of comparative research (United Nations, 2000b).

Obviously, it is desirable to involve national experts who have an understanding of the individual data sets and their contexts and can interpret them. However, this way of proceeding is expensive and may not always represent the best use of scarce resources. A compromise model might call for work in regional teams, which collaborate closely, and then attempt *post-hoc* harmonization of the data across the regions. Such work

might be more efficient because countries can more easily and cheaply share expertise. They will have a greater understanding of one another's situation. They are more likely to share common problems and to find similar relevant solutions. The diversity of languages may be reduced, and the "leading country" in a region may help the others. The countries may share a common identity. In the higher education field, there is an immense amount to learn from the OECD experience in developing indicators.

But the regional model also has disadvantages in that it is more difficult for the leading countries in a region to develop and to learn. The regional model can lead to a loss of the global picture. Partitioning the world can lead to a fragmentation of policies and a lack of appreciation of the interdependence of countries. For example, it can be argued that equity and sustainability within the poorest countries cannot be achieved without a fundamental rethinking of northern consumption and expenditure. Allocating countries to homogeneous clusters also reduces the opportunity to explore exciting differences that emerge when making comparisons across a heterogeneous group. For an example of heterogeneous comparisons in the field of education, see Colclough (2001), who has carried out a study comparing the very different education systems in Anglophone and Francophone Africa.

5.3. Problems in Achieving Comparability

The problems involved in collecting comparable data are similar to those outlined on indicators: that the need for cross-national data leads to the acceptance of the lowest common denominator; that the latter fosters inertia in the system by making revisions difficult (the problem of making the methodologies relevant for the strongest countries as well as for those at the "trailing edge"); that it is vital to be sensitive to the burden of data requests on countries; and that cross-national data may not be specific to national needs thereby making it more difficult to involve users of national data and distorting national agendas. For example, data harmonized internationally are of less value nationally because age ranges for different stages of education vary among countries. Thus internationally harmonized education statistics will not necessarily correspond to the picture recognized in a particular country.

Cross-national comparative analysis is an important statistical tool, but it also brings risks: frequently politicians or senior civil servants are dismayed by the relative results for their countries and tend to blame the messenger rather than examining the message. An escape for statisticians is to direct the blame onto the methodology. No cross-national study can be perfect as far as comparability is concerned, and it is only too easy to find reasons why the data should not be taken seriously. An outcome of this unhappy state of affairs is the withdrawal from cross-national research of those countries that achieve disappointing results and occasionally a more catastrophic impact upon the careers of the national statisticians involved. On the other hand, some statisticians manage to turn poor comparative

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results to their advantage using them as a "rallying call for more resources". International statisticians, whilst being sensitive to the situation and concerns of their peers in national agencies, should fight for the transparency of comparative data and should not collude in their suppression when the data are uncomfortable. Transparency should, of course, extend beyond the data themselves to cover information about the methodology.

Harmonization of data collection is necessary but not sufficient to generate valid cross-national data. Full access to the individual components is also essential. For example, within Europe access to cross-national sources can be hampered by lack of unified legislation on confidentiality and data protection.

6. INTERNATIONAL CLASSIFICATION OF DATA

The collection of comparable data must be conceptually well anchored and is heavily dependent upon the use of standardized classifications of key variables. A major part of the work of an international statistician is the development and maintenance of such classifications. Without such activities, "comparability is only skin deep" (Church, 1996). Moreover, the consultation necessary to develop classifications is expensive and time consuming and, even when standard classifications are employed, differences among countries can be an artifact of the data collection method or can reflect the administrative system of which they are a product and thus not be "real".

> Classification activities have been of prime importance... not because of some imagined obsession amongst statisticians with order but because of an indispensable need for coherence in the statistical description of economic and social realities.... It is thanks to the universality of this language that information from Sweden or Portugal, Australia or Mexico can express the same economic and social phenomena in a comparable way.... To be effective, a statistical language must be developed systematically so that different kinds of norms are compatible and relations can be established between different information (Malaguerra, 2000).

Holt (1998) argues that

> It is rare for the concepts that we strive to measure to be driven by a well-defined theoretical construct. When conceptual clarity is lacking, statistical integrity can nevertheless be enhanced by adherence to international standards.... The very fact that such standards are agreed internationally is both a guide and a support for national statisticians producing statistics whose interpretation may be politically sensitive.

Whilst both Malaguerra and Holt are correct with respect to the importance of developing strong international standards and classifications,

there is a mismatch between the expectations and the resources at the disposal of those working on standards which often means that the standards are the objects of insufficient research and are based on inadequate consultation.

7. IMPROVING THE QUALITY OF INTERNATIONAL AND NATIONAL STATISTICS

7.1. Defining Quality

Quality is defined in ISO 8402 as "the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs".

One role of statisticians is to improve the quality of collected data. However the term, quality, as applied to official statistics, is not easily defined, being comprised of many components including:

- validity;
- reliability;
- relevance to policy;
- potential for disaggregation;
- currency;
- punctuality;
- coherence across different sources;
- clarity and transparency with respect to known limitations;
- accessibility and affordability;
- comparability through adherence to internationally agreed standards;
- consistency over time and space;
- efficiency in the use of resources.

The optimum combination of these components is dependent upon the use to be made of the data. Data acceptable for one purpose might be inadequate for another and, since most data are used for many different purposes, the process of determining "fitness for purpose" is extremely complex and requires wide consultation. Inevitably, the trade-offs to balance the different components of quality will lead to the disappointment of certain users.

7.2. Achieving Quality

International statisticians are constrained in what they can do about the quality of data received, and since the expectations of users are often unrealistically high, these constraints must be honestly expressed. So what options are available?

The fundamental and overriding aim must be to collect data which are relevant to the policies being addressed, to ensure that there is agreement on the scope and definitions being used, that providers of the data are partners in the process, and that they understand the importance of collecting high quality data. Increasingly, the problem in relation to data on

higher education is that there is a need to reflect private as well as public sources of education provision and funding.

- *Consult countries about data collection.* It is important that the data requested from countries be consistent with, and anticipate changes in, their national priorities as well as taking account of their capabilities to meet the requests. (However worthy this principle, it is in reality, expensive and time-consuming, especially for truly international agencies to develop effective means of consultation, and inevitably a degree of tokenism is rife. Statisticians in regional agencies dealing with more homogeneous groupings of countries are better able to take account of the views of their national counterparts.)
- *Engage in partnerships with both users and producers of data within countries.* The objectives are to develop a greater understanding of the significance of continuous improvement in statistical work, to examine ways in which quality might be assured, especially through the organization of national statistical systems, and to forge national commitments to provide quality data. In addition, national statisticians should be assisted in improving their user focus and communication skills.
- *Be temperate in what data are requested.* There is a danger that the sheer number of data collection exercises undertaken by international agencies could overwhelm the capabilities of some countries to respond. Therefore, each new initiative must be subject to careful scrutiny, and there must be periodic reviews of existing activities. (However, the latter can be difficult for the international statistician who wishes to be responsive to the wide range of reasonable demands for cross-national data.)
- *Identify "key statistics".* A possible means of addressing the problems resulting from the wide variation among the statistical capacities of countries is to prioritize international demands so that those with limited resources may concentrate on key data collections.
- *Minimize revisions to international surveys, classifications, and methodologies.* (This stipulation inevitably conflicts with the need to obtain data relevant to current needs, and achieving a balance between revisions and continuity is made difficult by the different stages of statistical development of countries. For example, the UNESCO Institute for Statistics is under pressure from statisticians in some developed countries to revise the 1997 International Standard Classification of Education (UNESCO, 1997) which many countries are still in the process of implementing.)
- *Ensure that good practices are employed within the international agencies.* These practices should include openness about the collection, processing, and analytic methods employed, especially in relation to estimation and imputation procedures as well as the importance of mentioning in accompanying text any uncertainties in forecasts or projections, the need for time series to be provided on a

comparable basis, the importance of building in-house expertise and using advisory/review bodies, the value of closer co-operation with the suppliers of key data, the strengthening of quality control procedures, and the inclusion of source information for all statements based on statistical evidence.

- *Develop a framework for the delivery of information on the quality of data.* There is a legitimate concern about the spurious accuracy of data, which has come to be known as the "professional culture of precision". As Thomas Mayer relates, we "act like the person who, when asked about the age of the Amazon river, replied that by now it is one million and three years old, because three years ago he was told that it was a million years old" (Mayer, 1992).
- *Adopt the principle of "no surprises".* National statisticians should be informed if data have been altered in any way in advance of international publication, thereby giving them (where feasible) the opportunity to comment on the changes. (There are those who argue that under no circumstances should international statisticians publish any data that have not been approved by the appropriate authorities within countries. This view is held for two reasons: one that "filling in data gaps" discourages countries from investing in statistical systems which provide the complete set of data; the other that this right of veto is a key element of "data ownership". However, there is an inherent conflict between this right and the need to provide better estimates in cases in which the national data are known to be wrong, especially if there is suspicion that the data have been politically manipulated.)
- *Share data and information, including meta-data and methodologies, across international agencies.* In current jargon, this recommendation might be described as "joined-up international government". It reduces the burden on countries of responding to requests for data and subsequent clarifications and enables the creation of harmonized cross-national data sets minimizing problems caused by contradictory data sources. (Even though good progress has been made under the auspices of the United Nations Advisory and Co-ordination Committee on Statistical Activities to reduce the duplication of requests for data, it has not been entirely eliminated. One of the obstacles to co-ordination is the decentralization of statistical activities within many international agencies so that surveys and other statistical activities are often conducted by staff members who do not work in the respective statistical unit. Sharing meta-data across agencies and collaborating in data processing are not yet universally accepted practices, and the mantra, "collaboration on input, competition on output" has not proved helpful).
- *Strive nationally and internationally to improve public confidence in the integrity and independence of data.* "Public trust is the crucial test for the quality and integrity in official statistics". The influential report of

the Royal Statistical Society in 1990 made a powerful case for strengthening public confidence: "If statistical information is not seen to come from an authoritative, independent source, it loses its value as a currency of public debate, and confidence in the debate, itself will be eroded".

- *Embed data requests within programmes of relevant statistical capacity building.* The abilities of countries to respond to international data requests should be assessed. Assistance should be provided through programmes of capacity building. These should include the identification of national centers of excellence where statisticians may share their experiences and good practices.

8. DEVELOPING THE STATISTICAL SKILLS BASE IN COUNTRIES

8.1. The Importance of Capacity Building

The aim of statistical capacity building should be to help countries to become self-reliant, both financially and institutionally, so that they may acquire the expertise to determine their own data needs and priorities, to collect these data, to interpret and to use them effectively; to undertake research, problem solving, and problem formulation; and to sustain these capacities.

Capacity building should not be confined to the staff of the national statistical institutes but should also take account of the needs and circumstances of statisticians in line ministries or in local government who often play a critical part in data collection yet can be more vulnerable to political interference in their work and often do not see themselves as part of a professional community. Although there is an apparent acknowledgement of this situation, in practice, almost all-statistical capacity building focuses on the staff of National Statistical Institutes.

The development of a professional identity for statisticians can be a very valuable aspect of technical assistance. Consideration should also be given to ways in which researchers and policy analysts might be helped to gain access to, to utilize, and to value the data of their own countries. Much more attention should be given to renewing and sustaining strategic centers of potential excellence in the developing world, which have been depleted by over twenty years of South-to-North brain drain.

Partnerships in Statistics for Development for the Twenty-First Century (PARIS21) – an initiative of the World Bank, the IMF, OECD, and the United Nations – was launched in Paris at the end of 1999. It aims at building statistical capacity as the foundation for effective development policies by helping to develop well-managed statistical systems that are accorded appropriate resources. In the longer term, it hopes to promote a culture of evidence-based policy making and monitoring in all, but especially poor, countries in order to serve to improve transparency, accountability, and the quality of governance. These laudable aims now deserve to be made concrete by means of a positive action plan backed by appropriate funding.

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8.2. Models of Capacity Building

In September 1997, a workshop held in the Netherlands brought together donors and recipients of technical co-operation in statistics to discuss which models of assistance are most helpful. The outcome was a very useful proposal for "guiding principles for good practices in technical co-operation in statistics" which was subsequently discussed and adopted by the UN Statistical Commission (United Nations, 1998). These guidelines address the fact that there are responsibilities on the part of the recipients – particularly in relation to their commitment to the assistance, the availability of motivated staff, and their absorption capacity – as well as the donors, to ensure that full consultation takes place and that both have a clear grasp of the needs and priorities of the given country in order to design appropriate assistance. Karlsson (1997) argues that capacity, like democracy, cannot be created from the outside and that "essentially it is formed by internal dynamics".

8.3. Difficulties in Capacity Building

A recurring theme of the country participants at the workshop in the Netherlands was the high cost of international consultants. The anguish caused by the fact that a consultant might be paid twenty times more than the staff being assisted can be very destabilizing. This concern is evident in the development literature. Jaycox (1993) writes of the deleterious impact on professionalism in developing countries of the tendency to use expatriate technical assistance to solve all kinds of problems. He called for the creation of a "demand for professionalism in Africa".

Ko-Chih Tung has argued that past development efforts regarding education statistics have "led to heavy reliance, sometimes near total dependency, on foreign experts and imported turnkey solutions, which have often resulted in ignoring the importance of directly involving national producers and consumers of statistical services. In this mode, development co-operation has often been narrowly technical and therefore self-limiting." He describes problems of redundancy, incompatibility, and even a mutually corrupting dependency between the providers and receivers of statistical assistance. He speaks powerfully of the "graveyard of collapsed, abandoned, and outdated systems" (Tung *et al.*, 1999).

9. SHARING DATA

9.1. The Importance of Sharing Data

There is widespread recognition of the importance of exploiting, in social research and analysis, the rich data resources of official agencies in particular but also of academic and commercial organizations. In relation to data on higher education, this source is especially important because those involved in higher education must be partners in its analysis. However, the facilities for data access in the developing world are very poor. We need to acknowledge the importance of giving access to data in electronic form

(alongside conventional published material) and, where legal constraints permit it and operational procedures can be devised, to individual level data as well as to aggregate data. We must also help statisticians in the developing world, both users and producers, to reap the benefits of sharing data. These benefits can be seen in terms not only of efficiency through the direct exploitation of the data but also of altruism, with existing data sets being used for educational and training purposes as well as knowledge transfer. The creation of a community of skilled users, who will help to improve the quality, credibility, and visibility of the data, can directly benefit the data provider. It will reduce the response burden, which is of particular concern to developing countries.

9.2. Fostering the Sharing of Data

We need to create a culture in our institutions and in our societies, more generally, in which data sharing is the norm. A prerequisite for this is a climate of openness in which criticism of data collection or analysis is factual and temperate, with data being used responsibly. Even within the academic social science sector in the developed world, there are pockets in which the culture of data sharing is not accepted, perhaps because primary researchers are concerned that they might not receive formal credit for data sharing and that other academics might generate earlier or better publications from their secondary research. The institutional reward system for research needs to be examined to identify and remove such barriers to sharing. It is unfortunate that developing countries are being encouraged to move from a collegial higher education system to one that is more competitive without a full understanding of some of the negative benefits, which could be especially acute in countries with limited resources.

We should seek to develop data policies to ensure that deliberate replication is encouraged but that ignorant duplication does not happen, and to exploit investments in data.

The case that data resources for social researchers are analogous to large expensive pieces of equipment for physical scientists was accepted by the European Union for the Fifth Framework Programme of funding. Despite this growing recognition of the value of data, there are many areas of the world in which data are simply not available for purposes of research, because of a poor infrastructure and limited expertise in data handling but also because of the weak links between government officials and academics. This situation must be of concern since the effect is a widening gap between the developed and the poorer countries in analytic skills, which exacerbates the disparities.

The development of endogenous capabilities is an effective deterrent to brain drain. The UNESCO report on the World Summit for Social Development (1996) states that

> Alongside the action to enhance national and regional capabilities for higher education and scientific and technological training, it is also

essential to promote both basic and applied scientific research and the dissemination of its results.

Developing analytic skills within countries, which are complementary to those within the international agencies, is essential to partnerships, and access to information is a necessary prerequisite. The capacity of countries to attract and retain high-level professionals is critical. As an international community, we must examine and try to reduce the barriers that prevent countries from acquiring and maintaining a cadre of statistical experts.

10. FACILITATING ACCESS TO DATA

Support must be given to enhance access to information and communication technologies and to ensure that wider use is made, by researchers in the countries concerned, of the data that have been generated with the very precious resources of given countries. The lack of preservation facilities and expertise means that a small trickle of valuable data is often lost, and the lack of accepted systems for the involvement of academics means that even the few existing data are not exploited. The lessons that electronic data are not a finite exhaustible resource and that their value is increased, not diminished, by their use have not yet been learnt in much of the developing world.

11. DILEMMAS AND PRINCIPLES

11.1. National Sovereignty versus National Accountability

A theme running through this study has been the tension between respect for national sovereignty and the importance of ensuring access to national data of integrity. In particular, data are a vital part of the system of accountability in relation to the use of overseas assistance. Considerations of a political nature (establishing or maintaining alliances, sustaining political blocs or spheres of influence, ensuring votes in international organizations) are yielding to issues such as good governance, reducing inequalities in society, social development, and promoting the rights of the citizen.

11.2. Fundamental Principles of Official Statistics

Official statistics are essential for obtaining a transparent picture of societies and how they are developing across the world. They also serve as a basis for the efficient and appropriate implementation of political decisions and for the effects of these decisions to be monitored. In recognition of the importance of establishing national statistical institutes that are capable of providing data of integrity, the Conference of European Statisticians adopted the Fundamental Principles of Official Statistics in 1992. These Principles were devised in part to assist in the creation of national statistical institutes in the new environment of post-communist Eastern and Central

Europe, underpinning the moves to more democratic systems (United Nations, 1992).

The Fundamental Principles have served to "foster a common understanding about the importance of statistical integrity. They have raised consciousness, and in so doing have strengthened international bonds. In addition to the countries in transition, others have also been prompted to look afresh at their own frameworks of statistics to see how they stand up to scrutiny against the principles".

These Principles originated in Europe but have also proved useful in other parts of the world, as demonstrated by their adoption by the UN Statistical Commission in 1994. As Seltzer (1994) explains, "The Fundamental Principles, United Nations handbooks, and similar materials were designed to aid statisticians, politicians, and the public in each country to build a useful, impartial, and reliable statistical system. Although individual national statisticians might themselves invoke the Fundamental Principles or a United Nations handbook to protect the integrity of the statistical system when it is subject to domestic threats, the same statisticians may well react defensively if they are seen as the subject of some sort of international investigation".

11.3. Ethics and Codes of Practice

THE NEED FOR ETHICAL FRAMEWORKS

All of us, regardless of our chosen professions, have a duty as humans to exploit our skills, expertise, and opportunities in pursuit of justice and human rights. Openness about methods and operations is a prerequisite for building confidence in statistics. A statistical agency which shows a balanced and open approach to the measurement of its own performance can only serve to strengthen its reputation for objectivity and impartiality – even when some performance measures are not as positive as might be liked.

A broader but related issue is whether or not statisticians accept responsibility for acknowledging the limitations of quantitative information. As statisticians are wont to do, they over-emphasize the quantitative. Richer sources of material might be created were statisticians to appreciate more readily that quantitative material alone provides a partial picture and to work in partnership with social scientists to add qualitative, in-depth research to the quantitative frame. They must be more willing to enter into discussions about the strengths and limitations of their studies. One of the criticisms is that they oversimplify and are unwilling to tackle the complexities of the real (and messy) world:

> Reductionism is reducing the complex and varied to the simple and standard. Its method is to focus on parts instead of wholes. Yet many professionals seem driven compulsively to simplify what is complex and to standardize what is diverse. Status, promotion, and power come less from direct contact with the confusing complexity of people,

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families, communities, livelihoods, and farming systems, and more from isolation which permits safe and sophisticated analysis of statistics. It is the reductionist, controlled, simplified, and quantified construction that becomes a reality for the isolated professional, not that other world out there" (Chambers, 1997).

The Personal Dimension

The challenge for managers of those seeking to develop information on higher education must be to retain a sense of mission amongst their staff – the belief that they can "make a difference" – whilst ensuring that they temper this sense with realism. Jowell (1986) in his comprehensive overview of the value of codes of professional ethics for statisticians calls the idealism "statistical zeal" but warns against the "crusading view of research as an instrument of social change" as this leads to many of the most dubious ethical decisions. In a multicultural environment, it is even more important to be explicit about one's own motives and values. A transparency of interests should be a significant goal, combined with a healthy dose of respect for the values and ideas of one's counterparts. This attitude cannot be achieved quickly, as mutual trust and understanding take time to build, but they are important investments for future collaboration.

12. CONCLUSION

Statistics can serve to benefit society, but, when manipulated politically or otherwise, may be used as instruments by the powerful to maintain the *status quo* or even for purposes of oppression. Statisticians working in international contexts, usually employed by international, supra-national, or bilateral agencies, face a range of problems as they try to work with their national counterparts to promote policy based on evidence. One of the most difficult is the dilemma between open accountability and national sovereignty (in relation to what data are collected, the methods used, and who is to have access to the results). The meeting in Hiroshima was considered as an opportunity for a range of people, who share the common goal to improve the quality and effectiveness of higher education systems across the world, to debate how we can work together to collect more timely and reliable data to inform our decisions.

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IV. On the Uncertain Consequences of Taking Advice from Procrustes

GUY NEAVE

1. INTRODUCTION

The history of the hospitality and hotel trade is long and, some would say, glorious. Thanks to the efforts of such heroes as Charles Ritz of Switzerland, the Anglo-Italian, Charles Forte, and the American, Howard Johnson, the hotel trade has, over the centuries, risen to its present-day crowning heights in such world-girdling chains as the American Holiday Inn, the French Novotel, and the Dutch Golden Tulip. However, for every hero, there are many villains unsung, some of whom have attained reputations of quite mythical proportions.

The most unspeakable amongst this latter category was a certain Procrustes. Procrustes came from an ancient nation for which hospitality was a sacred obligation. He was an Ancient and Classical Greek. Nowadays, he would find a place in police records as a psychopath with sadistic tendencies, much given over to exactitude, precision, and to the noble art of measurement, a scholarly rigour that he applied with total impartiality to his wretched guests.

Procrustes, so the legend tells, was the proud owner of a bed. His particular bent, his *peché mignon*, was to ensure that his guests fitted the bed exactly and precisely. Guests of restricted growth, he stretched. The outsized and oversized he trimmed. Few – if any – survived his attentions. He was, if we care to think of it in these terms, the pragmatic inventor of the notion of "goodness of fit", well known to statisticians. Had more of those engaged in the science of evaluation, and had the elaboration of its techniques benefited from a classical education, they would doubtless, have accorded Procrustes the honour of being the unholy father of benchmarking as well.

2. UNTIMELY QUESTIONS

Frans Kaiser, the Rapporteur for the "Roundtable on System-Level Indicators for Tertiary/Higher Education", supplied the participants with a list of things to be borne in mind (Kaiser, 2003, in this volume, pp. 31-35), to which more could be added. First, a fundamental question: "What is a system indicator?" "Why do we need it?" These are deceptively simple questions. Let me tackle them in reverse order.

In the first place, one of the most preoccupying developments to light upon higher education in the course of the 1990s, even if historians will find its origins well before that decade, has been the increasingly

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foreshortened planning horizon (Delors, 1998), a foreshortening that, in many countries, has transferred itself to the evaluative cycle, itself a consequence of the drive for efficiency, publicly stated, and for performance and accountability, publicly demonstrated. We see in the notion of the "system-level indicator" a lever which, at the very least, will palliate what some have termed "the tyranny of the present" and at the very best, restore the capacity of the individual university to entertain and act on a long term interpretation of its purpose or of its responsibilities – or give it the means so to do.

This author is not sure, however, that taking a symptom of the illness as a form of treatment guarantees a cure. We have to ask ourselves why the short-term has triumphed, apart from the various forms of new public control that are explicit in the Evaluative State (Henkel, 1998; Neave, 1988, 1998).

3. THE SPEED TRAP

It is very much part of the *Zeitgeist* to believe that the world is a faster place, that history – or our rush towards its end (Fukuyama, 1988) – is speeding up. It is a perception that lies at the heart of the new theology of today – Globalization – and its principal Gospels – Internationalization, Regionalization, and the Network Society (van der Wende, 1997; Scott, 1998; Castells, 2001). Because change – or fashion, which is a very different thing – comes upon us faster, we have to move, so this logic argues, in a similar precipitation or be thought irresponsible or, worse still, impertinent – to use a Gallicism current in UNESCO vocabulary. There is, moreover, a very explicit threat now going the rounds should we prove so obdurate or insensitive to fashion as to dismiss or to ignore it. That threat is contained in the specter which the fashionable brandish over the head of the university – namely, the hordes of so called "alternative providers", ready to step in to take over the more profitable parts of skill creation and to do well by doing good through the expropriation of a public good, namely access to, and generation of, information and, more rarely, knowledge.

It is arguable – and many have done so (Scott, 1998) – that the situation the university faces today has no precedent in the eight hundred or more years that constitute the history of the European edition of higher learning. The implicit argument, which follows from this point, is, of course, that there is nothing to learn from history and, indeed, history is both powerless and, last, in contemporary insults, impertinent. We can cheerfully forget it, however, whether or not our grandchildren will be as cheerful about the consequences of the history we shall certainly make, is perhaps best not even considered. Let me point out one thing, however. The university has not always been conceived as an institution, the obligation of which it is to respond in panic-stricken fluttering in the face of the here and now. It was, on the contrary, the agent of long-term change and general modernization (Neave and van Vught, 1994).

From this perspective, our task to identify system indicators may be seen as an effort to return the university to this engagement and to furnish an instrumentality for diminishing the ephemeral. It might even provide us with the lever that would permit the sloughing off of those elements of training which, by their nature, have to obey the imperative of the short term and which may well be better sited in the arms – or the cash registers – of the "alternate providers" (Nybom, 2000).

Such heresy may not be pleasing. But it raises the question of whether the system-level indicators for which we are groping are to be universal across *all* institutions of higher education or whether they are not more suitable for *some* of them, just as tactical indicators – supposing we reach an operational distinction between the two – are certainly more pertinent for other institutional forms in a system the variety and complexity of which grows greater by the year.

4. ANOTHER ESSENTIAL ISSUE

To turn to the first of the two questions posed earlier – that is – to the notion of a "system indicator". Is there such a thing as an indicator that, by its innermost essence, is truly "systemic" as opposed to indicators that are used or which serve a systemic purpose? One of the assumptions of this Roundtable was that we should look to our instruments, to our tools. It was presumed that if we can find pointers that allow us to concentrate the attention of institutions upon the basic frame factors that shape their long term purpose and which give them a good chance of attaining it, we shall have done well by the Prince, by the Republic of Scholars, and by the University Administrators of the world. However, there is another side to our basic mission. The other side requires that we not ignore entirely that equally important fact of *how* indicators are used. We have to be just as sensitive to the honest artisans, technicians, and latter-day sons of Procrustes who, like their ancestor, use them or misuse them.

5. MEASURES OR MEN?

Behind our exercise in exploring this domain, we come back to a very basic issue which, these ten years or more, has run beneath much of the reforms in Western Europe and elsewhere as well; namely, what is the right balance in achieving system-level goals between instruments and measures *versus* men and women. Over the past decade, we have inclined most decidedly towards the view that instruments are the prime forces, which is an alternative view upon the assumptions that underpin the Evaluative State. Still, there is another school of thought which, following the paradigm of the business firm, argues that leadership is no less important (Hirsch and Weber, 2001). Our Roundtable would appear to have fallen into the former approach. It is for this reason that I underline the latter thesis.

Let us also remind ourselves that indicators are precisely that. They point towards some item or process. They are very often surrogates – that is,

replacements for activities, which, sometimes, do not easily lend themselves to quantification (Johnes and Taylor, 1990), but are held to be most useful even so. Let us also bear in mind that indicators are, perhaps, the supreme example of two processes – *abstraction* and *de-contextualization*. They serve the purpose of extracting what is held to be information necessary for governments to assign resources, to induce modifications to institutional behaviour, and to inform the public. They provide information. They indicate difference or similarity on a stipulated dimension or criterion. They do not necessarily provide either knowledge or understanding. In other words, they do not necessarily provide an explanation for whatever degrees of difference or similarity that they may throw up between systems. For that, one must seek elsewhere. Last, but very far from being least, they represent only one account of whatever unit is measured.

6. THE RETURN OF CONTEXT IN POLICY-MAKING

One of the most important developments in the application of public policy that has taken place in the course of the past decade lies precisely in the opposite direction – that is, the return to context as a fundamental part of allocating resources. Indeed, the importance of context is so significant that it has permeated even the spheres of world banking (The World Bank, 2000). Such a rediscovery of context is of the utmost significance for at least two reasons, both of which have bearing on our task. First, it presumes that single mode accounts of higher education, however necessary they might be, are patently not sufficient – even for policy-making and above all not at the highest levels of aggregation, effectively the system-level. Second, it may be argued that the return of context bids fair to undermine the relevance of universal "package" solutions of which de-contextualized technique appeared once to legitimate and justify within the setting of the nation-state. Not untypical of this earlier, indicator-driven approach to higher education policy was that previous phase in World Bank activity which revolved around "rates of return" analysis (Psacharopoulos, 1988), often with the heartiest disregard for the political, social, and institutional environment into which they were injected.

On their own, "de-contextualized solutions" are an interesting phenomenon, a notion of homogeneity which once underpinned the higher education systems of many nation-states (Neave and Van Vught, 1991; 1994), but which today appears to be migrating beyond them to take refuge as a fundamental buttress to the theses of globalization and internationalization. Like Procrustes, we find it a useful perspective through which to pull our foreshortened systems of higher education to fit a larger world.

7. THE AMBIGUITY OF SYSTEMIC INDICATORS

What makes an indicator "systemic", I would suggest, does not lie primarily in the indicator itself. Our ingenuity may well come up with some.

Nevertheless, what makes an indicator systemic is not simply that it focuses on the systems level. It is also systemic because it invigorates the imagination of those who have recourse to such an instrumentality to inform their judgment and to enlighten their paths, which their vision often and their colleagues, sometimes, have revealed to them. Nor do I exclude the possibility that some might be encouraged to take a broader view by the force of persuasion that indicators often have. Whether such compliance, however, will bring about "deep change" is an entirely different matter, as recent studies in Swedish universities (Bauer *et al.*, 2000) and certain suspicions amongst the Dutch Higher Education Inspectorate (Scheele *et al.*, 1998) seem to hint.

We should exercise judicious caution as to the consequences of what we do. The adding of further indicators, if they are taken up and acted upon by governments, can just as well work in the opposite direction. Our Rapporteur warns us against the ambiguities of interpretation, and he is right to do so. For whilst they may assist and stimulate imagination and daring, they may equally serve to paralyze, if not overwhelm both virtues, when they are weak. Moreover, indicators can never act as a substitute for the absence of vision, nor for one that is faulty in the first place.

Certainly, they may help us in knowing, for instance, how far we are – or, for that matter, how near we are – along the route to achieving our elected path, and very useful they are in this respect. For indicators to be sensitive or even, for that matter, to be adequate, presumes a very high degree of consensus about the goals a higher education system wishes for itself or is instructed to meet – whether by governments or by international trading organizations. What is also required, to no less a degree, is the ability to take account of differences in models of development which individual systems incorporate or represent. This task is no small one because the basic assumption behind the use of individual system-level indicators is that the weighting of what they measure and its importance within the national agenda of higher education policy at the systems level is similar for all systems measured. This assumption, to say the least, is one of an exceedingly tall order.

8. *TOUT CE QUI BRILLE N'EST PAS DE L'OR*[*]

All that glistens is not gold, and not all those things about which we would like to know more are measurable, even though, certainly, we can choose those which are. However, here again what *can* be measured is not necessarily the same as what *ought* to be measured. Furthermore, the price of interchanging quality and quantity tends to be very great, just as the price of forcing the traveler into Procrustes' king-sized four-poster was very great for the miserable traveler. The price of locking in the imagination of leadership, administration, and academe, of seeking to confine them within the often unspoken assumptions that stand behind the individual

[*] "All that glitters is not gold" (William Shakespeare, *The Merchant of Venice*, Act 2, Scene 7).

component measured can often be – as the British have found to their cost – high in cash committed and very high indeed in terms of erosions in trust, confidence, and good will among higher education, government, and the public (Trow, 1998).

Yet, it would be foolish to take the view that indicators are devoid of any virtue. At a time when higher education is becoming in its myriad forms, varieties, and variations, so complex as to beggar the analytic abilities of the best, indicators do at least cut through that complexity. Whether in cutting through, they yield a true – as opposed to an illusory – transparency, an artifact of their own apparent precision, is a very different kettle of fish.

9. DIFFERENT ACCOUNTS – SUPPLEMENTARY AND COMPLEMENTARY

There are many different accounts of higher education. Indeed, their number is increasing all the time. From the twenty-two or so perspectives Tony Becher identified at the start of the 1990s (Becher, 1998), others have come to join them in the course of that same period. Mobility studies, international relations in the sense of student and staff exchanges between countries and across continents, quality studies, and evaluation studies are not the least of the fields which have burgeoned in the intervening period. Our knowledge of higher education is becoming richer. Whether it is not too rich for those who, like governments and consumers, seek information about where resources both public and private should be invested, is a question not lightly answered.

Even so, indicators – above all, system-level indicators – need to be complemented by other accounts if only for the fact that as a "stand-alone" mode of trying to gauge what is happening, they may inform, but they have little or no power to explain. They reveal differences. They may have a devastating plausibility. League tables are a particularly nice example. But, they do not tell us how to account for those differences – hence the need for other accounts which advance our understanding and that give us understanding of whatever trends stand revealed.

Plausibility is very far from being the same thing as understanding. And so, for that matter, is information. Moreover, this fundamental and inherent weakness in system-level indicators is compounded further. Difficulties in achieving understanding grow as the numbers of self-standing systems brought into to the realm of measurement grow, whether they are regional, national, or continental. Indicators are created in a context. Whilst multiplying different contexts may yield a succinct, apparently plausible, and an outwardly pleasing comparable tableau, it may, as one eminent British civil servant explained a few years ago to an Australian Commission of Inquiry, also be "somewhat economical with the truth".

10. DOXOLOGICAL DRIFT: A MORTAL SIN?

There is, however, a further phenomenon that tends to accompany the use of indicators in higher education. Whilst it is most evident in systems in

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East and Central Europe, it is no less present in Western Europe. The term coined to describe it, however, owes more to religion and belief than to the exact science of measurement. It is "doxological drift" (Tomusk, 2000).

Let me explain. A doxology is a sacred text – the source for the beliefs and revealed wisdom to which the Faithful, if they are not to be considered heretics, must subscribe and to which, in justifying their arguments and actions, they must inevitably refer. Some religions have many sacred texts. They are, accordingly, heterodox in the nature of their sacred knowledge. Others, by contrast, are characterized by the fact that their sacred knowledge is contained in a single text. Accordingly, they subscribe to an "orthodoxy" – to a single wisdom, often represented by a single interpretation and a single institutional form. There is, in short, "no alternative" – a modern and secular phrase which prolongs a very old mentality! For those with an historical turn of mind, the old Latin tag may not be entirely forgotten: *Extra Ecclesiae, nulla salus* – "Outside the Church, there is no Salvation."

Although relatively little is known at present about the exact mechanisms contributing to "doxological drift", it has both an important and highly pernicious, not to say perverse, effect. Doxological drift in the form it takes in higher education involves a displacement in the function which authority lays upon indicators. In theological terms, indicators move from fulfilling a heterodox purpose and take on the role of ensuring – and enforcing – "orthodoxy", that is, they are held to uphold one interpretation alone. Put in plain English, indicators become stripped of their interpretational ambiguity. They are also stripped of their tentative purpose. They mutate into hard and fast criteria of judgment, assessment, and evaluation. In terms of curricular theory, they loose their formative function and take on a summative purpose.

In short, an instrumentality designed to provide a provisional statement about the positioning of various national systems of higher education, mutates into a framework of control by which systems, and their performance are judged, weighed in the balance, placed in a rank order of glory and ignominy – or all three. Thus, an instrumentality which, in its pristine state, pointed up and highlighted variation, becomes part of a broader procedure, the one true path to righteousness, an instrument of close control, scrutiny, and much vexation.

11. A DISSENTING VIEW

But "doxological drift" has nothing to do with indicators *per se*. It is rather a consequence of attributing more power to indicators than they can bear or even justify. It is, in effect, a distortion of the principle of indicators which, as mere techniques of measurement and ascertainment, are as innocent – and as neutral – as the driven snow.

"Every indicator pleases
And only Man is vile...."

to parody the poetic efforts of Reginald Herder, an early Nineteenth Century Anglican divine.

Yet, "doxological drift" is far too general a phenomenon – present as much in the systems of East and Central Europe (Tomusk, 2000), as it is in certain unfortunate islands in the West – for us to dismiss it when we pick and choose and draw up our list. Certainly, we can readily appreciate why it comes about, if not always how. It comes about precisely because the information with which indicators supply us needs to be interpreted and understood, to be, if you will, reinserted back into what some are pleased to call "the policy context". And this necessity, as mentioned earlier, merely underlines once again the importance of context. Indicators, above all at system-level, alter the context of higher education just as their own pristine purpose may be altered by their contexts – regardless of the particular focus taken on it and regardless of whether that focus is construed and analyzed in terms of "the market", as official ideology, or as bureaucratic politics.

Whether we can, by anticipating this apparently unavoidable phenomenon, protect ourselves against it, is a delicate matter indeed. There is, however, a further development, and it too is no less Procrustean.

12. ANOTHER FORM OF DIFFERENTIATION AND DIFFERENCE?

Because indicators are deemed to be the trusty servant of transparency – indeed a very great part of their power resides precisely in their availability to the public – measures intended to shed light on one aspect of system behaviour often take on a different purpose when used by different constituencies with very different interests. This too is understandable given the often-astonishing opacity which, until recently, cut off what higher education had achieved – and how – from all save the most persistent members of the public. Certainly, some information is better than none. But knowledge that has meaning and validity is better even still.

It is at this point that we ought to permit ourselves the luxury of asking whether or not system indicators should overridingly be linked to outcomes. Nobody in his or her right mind will question the need for some – and amongst them the most crucial – to rest precisely on what a system of higher education or a segment within it, has achieved. They are indispensable for governments, for taxpayers, for industry, and not least for parents, all of whom have choices to make in investing resources and who, in their varying ways, regard outcomes as plausible demonstrations of excellence and relative efficiency. One may, however, ask whether or not outcome based indicators, and graduation rates in particular, are always useful for prospective students.

13. MODES OF INDICATORS AND THE STUDENT ESTATE

In a world that, we are told, will be one of unremitting change and spreading diversity – in institutional form, mission, mode of study, duration, and in the sheer variety of programmes available within the higher education system of

a country – it is also logical that the mass of students evolve similarly. And it is doing so. Indeed, in certain mature systems of higher education, it is not misplaced to speak of the "fragmentation" of the student mass into age groups, occupations, types of studies undertaken, etc.

Against this backdrop, it seems paradoxical in the extreme that so diverse a constituency can gain even a modicum of information about the provision, programmes, and courses on offer when all they are provided is often presented in terms of the performance of alumni about whom little is known that is up to date at system-level, save that they are alumni. *In fine*, our indicators, which purport to inform future students about the quality of provision, tend to rest on the implicit assumption that they will perform in a similar way to their erstwhile fellows. If this is not *determinism*, it is most certainly *faith* and *hope* in the absence of *charity*. Faced with a heterogeneous student body, what is needed are indicators about the quality of provision – in effect, another account to give meaning to quality as measured by outcome. Measures of student outcome, of graduation rates, may be satisfactory when higher education is cast in a "productivist" mould which, incidentally, outcome indicators reinforce. But they are unlikely to constitute direct knowledge of the quality of the provision of a given nation in different disciplines or domains of learning. In effect, we need to consider system indicators that go beyond outcomes and which allow students to have direct knowledge of the quality of what national systems may offer them, rather than relying on unsystematized – and unverified – publicity on the internet or on deductions as to quality and excellence based on the achievements of their elders who are not necessarily their betters.

14. CONCLUSION

In this article, the author has deliberately eschewed committing himself to recommending particular systems indicators. Such is the work of particular specialists. Rather, the concern of this author focuses on the consequences that the strengthening of one form of information may have upon the ways we view and seek to understand the complex workings of the higher education system. I have to confess to a certain misgiving about this exercise, not because I think it is not necessary. The more structured and regular information we have on the development of the systems of higher education in the world – in all their variety and difference – the greater the opportunity to test and to develop alternative accounts that transform such information into knowledge. I have to confess, however, to a certain trepidation at the temptation to see the technique of indicators as the most succinct way of understanding what is going on in the higher learning system, and because it is succinct in a world of haste, therefore the most weighty, the most appropriate, and the most influential.

The trend towards "orthodoxy" – of one right and desirable model, irrespective of how successful its original template appears to be – is rarely, if ever, fruitful for either creativity, scholarship, and maybe, not even for democracy. But that is a different agenda. And yet, by suggesting that we

should elaborate a series of world-girdling indicators at system-level, we should be wary indeed of the path down which such a course may lead us. Orthodoxy, like the self-fulfilling prophecy, is self-sustaining and, more to the point, self-validating. Naturally, in choosing certain indicators, we shall do so because we believe in – and, just as importantly, have evidence for – their utilitarian value, accuracy, and sensitivity. Yet, we have to be very clear on one thing: we are seeking to pinpoint developments that we hold to be important at this precise moment. That does not mean to say that other aspects will not assume equal or even greater importance later or that their impact is not beginning to accumulate. Of these we should be aware. They may require our attention later. Indicators have then a temporal context and for that reason, they are also provisional.

There is another side to avoiding "doxological drift". When we set a universal set of criteria to map the current condition of higher learning, we are also setting higher learning within a single overall frame of reference and also, of expectation and purpose. If, to the artisans of measurement, indicators are instruments that let us know what is happening, to governments and those who shape the way of the world, they are pointers to a purpose, sometimes achieved, often in the process of implementation or, rarely but not unknown, facing dismal failure. They are then instruments of intent, and intent is policy by other means, however, whether such policies are outwardly avowed or dare speak their name is not always as clear as many might wish.

System indicators are one level below global indicators and, of course, they can serve to track that selfsame process with the greatest of ease and very little adaptation at all. There are many models of globalization, some of them based on antithetical and conflicting ethical and moral principles – competition *versus* co-operation (van der Wende, 2001), expropriation *versus* restitution, to mention but the most obvious. To ask which of these masters we are to serve is indelicate. But not to pose such a question is unpardonable. Procrustes' guests had at least the right to ask the price of the lodging, regardless of what happened to them afterwards!

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V. Indicators for Tertiary Education Reform: A World Bank Perspective

JAMIL SALMI

1. THE NEED FOR INDICATORS

In many countries there are university rectors, presidents, or vice-chancellors who have little quantitative knowledge of what is actually happening in their institutions. In the name of academic freedom, they confuse autonomy with total independence. In these countries, the notion of national accountability is viewed as outlandish.

In many countries, there is no ministry of higher education and no government authority responsible for higher education. Some Latin American countries have a Council of Rectors, but the universities are autonomous and do not report to anyone in actual fact. A significant share of the higher education system escapes the authority of the government in countries in which 60 to 70 percent of students attend private universities.

In other countries, such as Chile, in addition to the public/private sector divide, a distinction between old and new universities is made.
And then, in many countries, one of the reasons for which the World Bank deals with indicators is that universities have budgetary entitlements. In Central America, for example, the universities receive 6 percent of the national budget, whatever happens. Therefore, why should these universities worry about indicators?

Why is information needed? For diagnostic purposes: if one wants to look at a higher education system and to find out what is wrong, what is right, and what kind of accountability is given. If one accepts that the budget represents public money, then there is the question of responsible accountability. And, finally, there is a point about operating in a competitive environment, where it might be useful to know what one's competitors are doing and how well.

For 150 years, the venerable *Universidad de la República* [University of the Republic], the oldest university in Uruguay, was in a monopoly situation. It represented the entire higher education system of the country. There was a very collegial relation, with everybody important in the country being a graduate of that university and voting for the election of the Rector, from the President of the Republic to all professors, janitors, students, and former students. No change had ever occurred in that university. And then, in 1986, it experienced a wake-up call with the establishment of the first Catholic University in the country.

Because Uruguay itself is a good Roman Catholic country, the people at the University of the Republic could not do much about the setting up of this new university. But then other people told themselves, "If we can have one private university, why not more?" So a few entrepreneurs established more private universities. Then, the public university went to court. It went all the way to the Supreme Court to try to prevent these private universities from being established, but the Court said yes, there could be competition in higher education. And for the first time in the history of the country, the University of Uruguay started to benchmark itself a little bit against its competitors and decided to establish Master's Degree programmes, for there were no Master's Degree programmes in Uruguay until the Catholic University established the first one.

Finally, a very important reason for looking at indicators is to make informed choices about the future. The Physics Nobel Prize winner, Niels Bohr, once said, "Forecasts are typically difficult to make, especially about the future". Nevertheless, it is important to try to think forward, accepting that one will not achieve exactly what one wants but, at least, if one has the baseline, one knows where one has started, and then one can plan ahead and take stock.

Who needs what type of information? Is there a set of indicators for all situations, applicable to all universities, in all countries? Or do we need different types of indicators, depending upon the question asked?

Who are the beneficiaries of the information provided by indicators? First, the state, for purposes of accountability, then the public at large, which needs to know where the system is going and how well individual institutions are performing. Then come the institutions themselves. And finally, the donors need to make sure that the resources, which are transferred to the recipient countries, are well used.

2. THE WORLD BANK EXPERIENCE

The first instance in which the World Bank makes use of indicators in the domain of higher education is in what is called "analytical work". The World Bank works together with countries to make a diagnosis of the most salient issues in higher education. To do that it has to design system-wide and institutional indicators.

Second, one of the missions of the World Bank is to provide quality technical advice to countries and institutions. It helps them look at different reform options.

There are three major forces of change interacting in higher education. The first one has to do with the main dimensions of regulation coming from the State. The second one represents the participation of civil society and partnerships with employers. The third one shows the competitive environment in which higher education institutions operate. At the intersection of these three sets of forces, there are critical factors, such as quality assurance, ranking systems, formula funding, etc., mechanisms, which can generate useful sets of indicators. Depending upon the aspect

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of the system upon which one wishes to focus, one can choose a varying set of indicators.

Developing indicators at the institutional level is equally important. A few years ago, the Rector of the Catholic University of Lima, Peru, needed help in starting a strategic planning exercise, for over the years, the University had been losing students. The University is located in what used to be the main area of the city, but with urban growth, there had been significant population shifts. Today, the university finds itself in a district that is very much one of low-income. One of the hypotheses to explain the loss of students was that students from middle- and high-income families were living in a different part of the city.

The University developed a set of indicators and conducted surveys among students and employers. They found out that the real problem was not geographical, but rather that some departments were perceived as being of poor quality.

Finally, indicators can be very useful tools for making international comparisons and for engaging in benchmarking across countries. The World Bank has just organized two stakeholder consultation workshops in Sri Lanka and Bangladesh and some cross-country comparisons were used to compare the realities in several South Asian countries.

Also, in some of the World Bank projects, the establishment of Management Information Systems (MIS) is financed. These systems serve as the basis for the production of system-wide and institutional indicators. Management Information Systems are being created, for example, in Argentina and Bolivia. In Argentina, the World Bank is supporting the network of public universities, helping it set up management information systems and establishing Intranet/Internet connections.

In Bolivia, the Dutch Government has been providing technical assistance to the second university of the country, the University of Cochabamba. This assistance was undertaken in a very co-operative manner, so much so that, at the end of the process, the Dutch university, which had been assisting the project, the Free University of Amsterdam, decided to transform its own Management Information System, back in Amsterdam, with the help of their Bolivian partners. And now, as a second phase, the World Bank is helping the Bolivian University to form a partnership with other public and private universities to implement the same management information system reform with them.

The World Bank has a project to support a new Student Loan Agency in Mexico for students in the private universities. The latter developed their own Agency. The federal Government took a loan from the World Bank and lent it on to the private Agency. In the course of project preparation, the World Bank developed a series of indicators: *demand and targeting indicators*, *financial indicators*, and *institutional operation indicators*. The main purpose of this exercise was to formulate, along with World Bank counterparts, relevant measuring instruments to look at the

impact of the project, to be able, at the end of the project, to see whether its objectives had been attained.

3. WHAT LESSONS HAVE BEEN LEARNED AS PROJECTS WERE DEVELOPED?

First, it is important to stress that dealing with indicators is not only a technical activity. There are important political dimensions involved as well. For example, in Argentina, at the beginning, the universities were very reluctant to participate, for they viewed the project as an imperialistic effort by the Ministry of Higher Education to reduce their autonomy.

So the World Bank decided that, instead of having a set of experts working at the national level in the Ministry, designing the ideal modules of indicators, the universities themselves would be involved in the preparation of the management information system. The project team identified a university that had a good module for academic management. Then, the universities were asked whether they would be willing to share this module with other universities. When they agreed, they took the lead in developing and adapting that particular module.

A second important point is that indicators should not be perceived as threatening. For instance, if the announcement is made that performance indicators will be linked to funding, a negative message is being sent. In this context, the interesting experience of the *Provão* examination in Brazil is worth mentioning. The *Provão* is an aptitude test administered to undergraduate students three months before they complete their studies. The results of the test do not count towards their graduation, but they are used to measure institutional performance and to make comparisons between public and private universities. It is interesting to note that even though it is a voluntary test, employers increasingly ask job applicants, "By the way, what score did you get on the *Provão*?"

A third dimension is the need to make good use of these indicators for purposes of planning, management, and monitoring. Producing them is one thing, but, if they are not put to use, much effort and resources have been wasted. A management information system is only the first step. Even more important is to develop a culture of application of these indicators. In Colombia, for example, the results of the accreditation process are published widely, and students who enroll in accredited programmes are placed on the priority list for receiving student loans.

4. CONCLUSION

Constructing indicators can be a very useful and powerful exercise that can have, beyond the technical dimension, some important political implications. After the reunification of Germany after 1989, a team of professors from West Germany was placed in charge of evaluating the East German higher education system. Since there was no tradition of

evaluation in West Germany, the professors had to invent and deal with a new set of indicators. At the end of the exercise, some of the professors asked whether it might not be useful to undertake the same exercise in West Germany. The process of asking ourselves what we want to measure and for what purpose can be as fruitful as the result.

PART THREE

NATIONAL VIEWS

VI. The German Perspective Regarding the Design and Use of System-Level Indicators for Higher Education

KLAUS SCHNITZER

1. SYSTEM-LEVEL INDICATORS AND THE SHIFT OF PARADIGMS

Reports on system-level indicators for higher education in Germany tend to yield a more or less similar catalogue of performance indicators as is the case in most of the countries bordering Germany. A very good systematic description of system-level indicators for higher education in Germany was produced by Karl Alwell in the OECD-IMHE compendium, *The Development of Performance Indicators for Higher Education* (Alwell, 1993, p. 61). It listed types of indicators and sectors of application.

This study will not repeat that exercise. Rather, it will attempt to analyze the strategic impact of these indicators for higher education in Germany at national level and in top-down or bottom-up processes at institutional and national level.

As stated in the outline of the UNESCO Project, "Strategic Indicators for Higher Education in the Twenty-First Century", factual reporting on indicators should not be a goal in itself. The main concern should be to work out the political context in which these indicators are to be used and how they gain or lose importance as political issues change over time.

Only in this context-relationship can performance indicators reveal their strategic meaning and strength and answer some of the "self-challenge questions to performance indicators" posed to national experts by Karen Abercromby and John Fielden, in their study of higher education indicators (2000).

The present study attempts to answer part of the question as to how German indicators match the vision of the World Declaration in regard to performance indicators (UNESCO, 1998). Its overall goal is not easy to achieve, for in terms of the German context of higher education policy in which performance indicators are embedded, a clear line of policy issues and trends in the state governance of higher education is difficult to trace. This difficulty must be explained as it makes clear that there are sets of indicators which do not suit the same rationale and which are interpreted in different ways according to the views of different stakeholders.

1.1. New and Old Public Management

The past decade in Germany was characterized by a wave of reforms in higher education aiming at the introduction of market mechanisms at national and institutional level. This process of change is still going on.

There are hardly any articles on education and conferences on higher education issues in Germany that have not discussed aspects of autonomy, competition, profile shaping, benchmarking, ranking, de-regulation, performance oriented funding, etc., on the one hand, and recommendations as to how to overcome obsolete State-regulated control and provision mechanisms, on the other. The discussion is dominated by the new paradigm of a market regulated higher education system.

This new paradigm not only develops new forms of strategic governance but also, as a consequence, a new set of indicators. Thus, it seems logical to concentrate the following paragraphs on the new role of indicators in the market-oriented higher education system of Germany. But as happens very often with fashion, the fitting of new clothing may catch the eye but continues to cover the prevailing functions of the body. The same seems, as well, to be true with regard to the new management concepts and steering indicators of the higher education system in Germany. Even though "new public management" issues are dominating discussions in the scientific/academic community and a debate on different market approaches is occupying the new "controlling" professions, one cannot deny that the higher education system in Germany is still fundamentally organized according to State regulations and planning indicators.

1.2. Conflict or Convergence of Paradigms

Attention has to be drawn to these conflicting paradigms as it is quite obvious that neither the wishful thinking of the traditionalists – fashions will change by themselves – nor the missionary optimism of the market-supporters – that market forces will supplant the concept of the welfare provision of study places will come true.

From a distance, the two conflicting concepts can be reduced to two positive goals. The goal of enhancing the quality of the higher education system in Germany calls, indeed seriously, for the introduction of competitive market elements into the steering process, while, on the other hand, the constitutional provision of free access to equivalent study opportunities calls for protective instruments for assuring, at the same time, the dominance of social demand.

1.3. The Third Way

As both goals find justification in the higher education system of Germany, they must be taken into account, now and in the long run, when systems of indicators are discussed. The question of if and how these too seemingly contradictory paradigms can be reconciled is an open one as, also, is that of whether the necessary convergence of the two concepts will suggest a "third way" of study reform, one suitable for Germany that might also be applied in other European, formerly purely state-regulated, higher education systems.

Christoph Oehler, a Nestor among German researchers on higher education, recently argued dialectically, in a provocative article (Oehler,

2001, p. 28) titled "Geplant wird immer noch" [There Is still Planning], that the basic consensus on the welfare state function of the higher education system can best be sustained by bringing together the system-level planning competencies that steer the higher education system and the institutional-level market mechanisms so as to optimize matching processes between the national planning framework and the institutional setting. By this means, universities and other institutions of higher education might better participate in the overall responsibilities of the State and of State planning.

At the moment, virulent conflicts and counterproductive antagonisms are more the rule than productive interaction between these two competing issues. This situation is made very obvious if one observes that system-level indicators are in parallel use in Germany. If the UNESCO project, "Strategic Indicators for Higher Education in the Twenty-First Century", could lead to the reconciliation of the two sets of indicators and their use, the result would be a step forward in overcoming the momentous stalemate in which the German debate is locked. It would contribute to the design of an indicator system of the "third generation". With this perspective in mind, the next two sections of this study lay the foundations of a discussion by demonstrating the parallel uses of indicators, first in a planning setting and second in a performance setting, in the actual higher education system in Germany.

2. *KENNZAHLEN* AND *RICHTWERTE* – SYSTEM-LEVEL INDICATORS FOR HIGHER EDUCATION PLANNING

The common indicators used in reform phases through the 1980s were key numbers (*Kennzahlen*) and standards (*Richtwerte*). The naming of the terms reveals the specific use of system-level indicators in the restructuring and consolidation period from 1945 to 1960 and the succeeding phase of active higher education development and reform policy from around 1960 onwards.

The West German higher education institutions were placed under considerable pressure to change and to modernize, which, in turn, initiated a phase of fundamental reform in the higher education sector. This phase began in the first half of the 1960s, reaching its climax in the mid-1970s, with the passing of the Higher Education Framework Act *(Hochschulrahmengesetz - HRG)* in 1976, and ended shortly thereafter.

The most influential factor in determining higher education development in West Germany between 1960 and 1980 (and beyond this period) was the continuous expansion in the demand for study places, a process which is still underway today.

The responsibilities of the Federal Government with regard to the funding and organization of the higher education system and scientific research have been extended since the end of the 1950s. By 1956, the Federal Government had started to participate in higher education funding, particularly in the areas of the expansion of higher education institutions

and the promotion of research and financial support for students. This co-operation between the Federal Government and the *Länder* was put on a new constitutional footing at the end of the 1960s (Amendment to the German Basic Law [*Grundgesetz – GG*] of 1969).

On the basis of these provisions, the following Federal laws were enacted:

- the 1969 *Hochschulbauförderungsgesetz* (*HBFG*) regulating the planning and funding of the expansion and construction of higher education institutions;
- the 1971 *Bundesausbildungsförderungsgesetz* (*BAföG*) regulating student financial support;
- the 1976 *Hochschulrahmengesetz* (*HRG*) regulating the structure and organization of the higher education system.

The consequences have been as follows:

- *the expansion of the existing higher education institutions and the construction of new ones.* The rapid growth in the numbers of students since 1960 has also led to the expansion of existing higher education institutions (personnel, premises, and courses), as well as to the founding of a large number of new higher education institutions.
- *admission restrictions and "overload".* The rapid growth in the numbers of first-year students and, indeed, students as a whole since the second half of the 1960s in certain subject areas, especially medicine, has led to serious bottlenecks and capacity problems. Despite the increased expansion of higher education institutions, admission restrictions (the so-called *numerus clausus*) have been introduced for a range of course programmes that are in particular demand. In 1972, following a ruling by the Federal Constitutional Court, which set narrow constitutional limitations regarding the introduction of admission restrictions, the *Länder* signed a convention regulating selection and admission procedures and set up a central body for the allocation of study places (*ZVS*) in Dortmund. It is responsible for the administrative organization of the selection procedure for a limited range of course programmes. The introduction of admissions restrictions represented – in historical terms – a first break with German higher education tradition, as the higher education institutions in Germany had always been relatively open and accessible.
- *institutionalization of higher education planning.* As in other areas of public administration, planning concepts and procedures, since 1965, have gradually become part of the higher education development process in the Federal Republic of Germany. However, only during the heyday of higher education reform policy was long-term planning, *i.e.*, the concept of systematically steering the future development of higher education by means of longer-term programmes, pursued. These plans defined the relevant objectives, the measures planned for

achieving them, and the corresponding implementation stages. State higher education planning changed fundamentally as early as the second half of the 1970s, when longer-term target-oriented overall planning was replaced by an administrative approach seeking a solution to acute capacity shortages.

- *expansion of State steering of the higher education system.* There has been a marked change in the role played by the State in higher education since the end of the 1950s. The State no longer limits itself to its traditional role, concentrating primarily on guaranteeing the legal and financial framework for the continuance of otherwise largely independent ("free") research and teaching activities.

The reasons for the increasing influence of the State lie, on the one hand, in its expanding financial and planning involvement in the higher education sector, as well as, on the other hand, in the widespread impression that the higher education institutions themselves did not have the strength to initiate the required reforms by themselves.

Fundamentally, a distinction can be drawn between three types of State steering of the higher education system:

i) statutory standardization in the *Länder* and at federal level, culminating in the passing of the Higher Education Framework Act *(Hochschulrahmengesetz)*;
ii) intensification of State steering through decrees and administrative regulations below the statutory level;
ii) a growing number of judicial rulings (by the constitutional, administrative, and law courts) which led to extensive regulation and bureaucratization of more than the internal situation.

This legislation for restricted expansion needed incremental planning tools, among others, *Kennzahlen* and *Richtwerte*. Most of them were concerned with planning and equal provision of resources.

The provisions concerning the award of study places, that mainly cite the responsibility of the State to offer as many study places as needed, refer to the human right to free access to education. The procedure for awarding study places was and still is the main field of operation of *Kennzahlen* and *Richtwerte* in Germany (see below).

Another important field of action was the design and use of social indicators to measure the promotion of social demand itself. As mentioned above, apart from the legislation to guarantee the supply of study places, a legal framework was introduced to support and raise social demand:

The so-called *BaföG* Law

- offered individual support to all German students;
- ensured equality of professional opportunity by granting individual support rather than compensating for social inequalities by means of varying arrangements;
- avoided discrimination at all costs;
- avoided preferential treatment for gifted students;

- activated the full potential of social demand notwithstanding the demands of the labour market.

BAföG-support was introduced with the stipulation that State support be subordinate to the responsibility of parents to support their children throughout their entire education. The principle of family contribution is stated in civil law and is still in force as well as the *BAföG*-principle of subsidiary support.

In conclusion, it can be said that, until the beginning of the 1990s, the use of indicators was mainly determined by the aims of equality both with regard to the supply of resources and with regard to social demand.

The elaboration and use of indicators in a system of equality had and still has two main functions as of the beginning of the 1990s:

- observation;
- planning.

2.1. A Retrospective Observation

The most important indicators for the observation of past developments in the higher education system at system-level are the key figures for higher education to be found in the *Hochschulstatistische Kennzahlen* published by the Federal Agency for Statistics (Statistisches Bundesamt, 2000, 2001). They have a long tradition and were produced in the 1970s alongside the process of providing open access and the evolving massification of higher education.

The primary reason for elaborating these indicators was the desire to condense the abundance of data to a small set of values briefly describing the characteristic structure of the system. The tables of absolute numbers of students, staff, space, and, later on, finances were aggregated and then subdivided to *structural ratios* or *index ratios*.

> Example: Pass rates (*Prüfungserfolgsquote*) "Number of examinations divided by four main types of examinations: university, polytechnic, doctoral, and teacher examinations".

These structural ratios had more or less a primarily descriptive function. Their informational value increased when they were compared in time series.

Still more significance was derived from so-called relative indicators, which related different objects:

- the ratio of the number of students entitled to enter the higher education system to that of the age cohort in the population (*Studienberechtigtenquote*);
- the ratio of the number of first year students to that of the total age cohort (*Studienanfängerquote*);
- the ratio of the number of eligible to that of enrolled students to first year students (*Übergangsquote*);

- the student/staff ratio (*Betreuungsrelationen*).

Another type of *Kennzahl* or indicator was introduced with the intention of using it as a "warning light". It was intended to deal with one of the main dysfunctions of the German higher education system: the growing study duration and the "over-aging" of graduates. The indicators in question were the following:

- student mode and quartiles of study-duration (*Fachstudiendauer*);
- arithmetic mean age of first-year students (*Durchschnittsalter Studienanfänger*);
- arithmetic mean age of graduates (*Durchschnittsalter Absolventen*).

In principle, this whole set of indicators was subordinated to the task of guaranteeing that access to higher education would respond to social demand for it, even to the extent of favouring excessive open access as well as academic freedom. The indicators recorded the impact and configuration of the resulting demand and the frictions of a process that was determined by free choice and the absence of steering.

Consequently, students were viewed as autonomous input-elements, as externalities of the higher education system. Even their knowledge and personal abilities, as decisive inputs into the process of teaching, were neglected as independent variables. This type of competence-indicator was only brought to the attention of the German authorities by the OECD-TIMMS Study.

The provision of study places in response to social demand were the main rationale behind most of these indicators. Although the indicators were good instruments of observation at the transition points of the process, nobody would have thought, at that time, of using them for the measurement of, for example, rates of return, effectiveness, or value added.

Cost indicators

It is true that as early as 1975, in Germany, a set of indicators was developed with a view to measuring the efficiency of higher education institutions. This project, launched by the Rector's Conference within the OECD-IHME Programme (Westdeutsche Rektorenkonferenz, 1980), designed and calculated, for instance, cost-indicators for the comparison of study programmes of different institutions. Obviously, this competitive and comparative approach was alien to the strategic thinking of the time. Because the resulting pilot study failed to have any influence at system or institutional level on policy actions taken in the 1980s, it was not followed up until the beginning of the 1990s.

Social indicators

Instead, policy-makers in higher education based their information preferably on descriptive indicators that conveyed a general impression of their policy outcomes. Therefore, apart from supply-side oriented indicators,

social indicators were the most important tools, in the phase characterized by open access, by which social mobilization could be observed and proven.

The serious interest in social mobilization and social justice with regard to open access was highlighted by a full set of indicators reflecting the demand-side of the mobilization process.

Time-series of overall participation rates – as cited above as being among the "key figures" – were produced observing the participation rate at:

- upper secondary school level;
- at the transition point before entering the higher education system;
- at first year level in higher education;
- at the overall higher education system-level.

Also, the participation rates of students from different socio-economic backgrounds were calculated. The indicators were condensed from special social surveys. These surveys extended back to 1951 and are still carried out today, every three years (BMBF, 1999).

Social group specific educational participation rates before and after access to higher education were produced with regard to:

- parental education (academics *versus* others);
- family income (quartiles);
- occupational status (blue collar worker, white collar worker, civil servant, and self-employed);
- social background (combined indicator of education, income, and status).

The indicator, "working class children participation rate", was the "water level" indicator of social justice in the higher education system and the "acid test" for all party-programmes for educational policy.

As portrayed in Figure 1, below, the participation rate of working class children rose only slightly in the 1980s, without diminishing the scissors-development between upper and lower classes.

Another key indicator in this field was the "reproduction rate of academics", an indicator also mentioned in the UNESCO Framework, but as a performance indicator, in order to gain an indication of the role of higher education "as a catalyst for the entire education system". In the human capital growth theory, favoured by OECD, this indicator is intended to explain "the probability for individuals whose parents have also completed tertiary education".

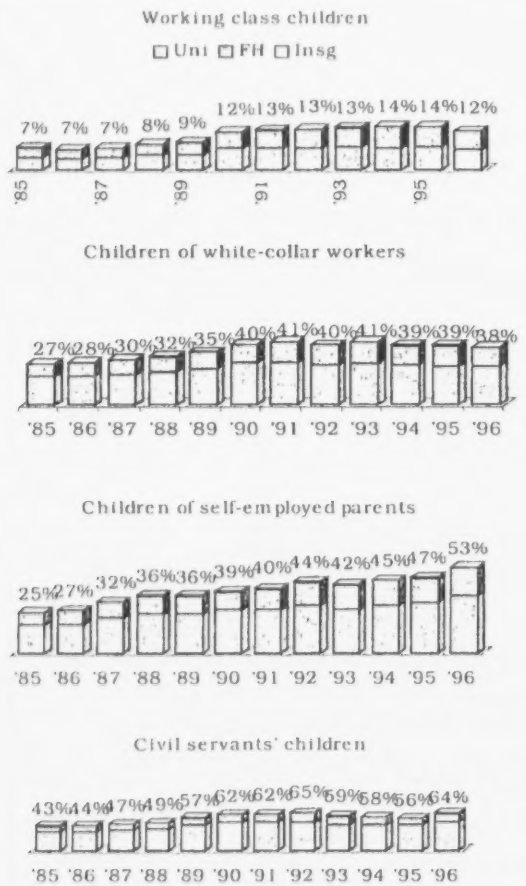
With regard to the use of indicators, one should note that, in Germany, this more or less similar indicator, *"ratio of students with an academic family background to age cohort of the same background"*, is interpreted in the opposite sense than in the case of UNESCO and OECD.

In Germany, the "catalyst" function is deemed to be the main barrier to the access of non-traditional youth to tertiary education. The assumption is that social selection is consolidated by the reproduction of academics as the main owners of cultural capital.

The "cultural capital trap view" (Boudon, 1974) becomes plausible – and might also be so for UNESCO – when this indicator is confronted with the complementary indicator of the non-academic reproduction rate, revealing a probability that is five times lower than the academic reproduction rate with a distance that has been expanding over three decades.

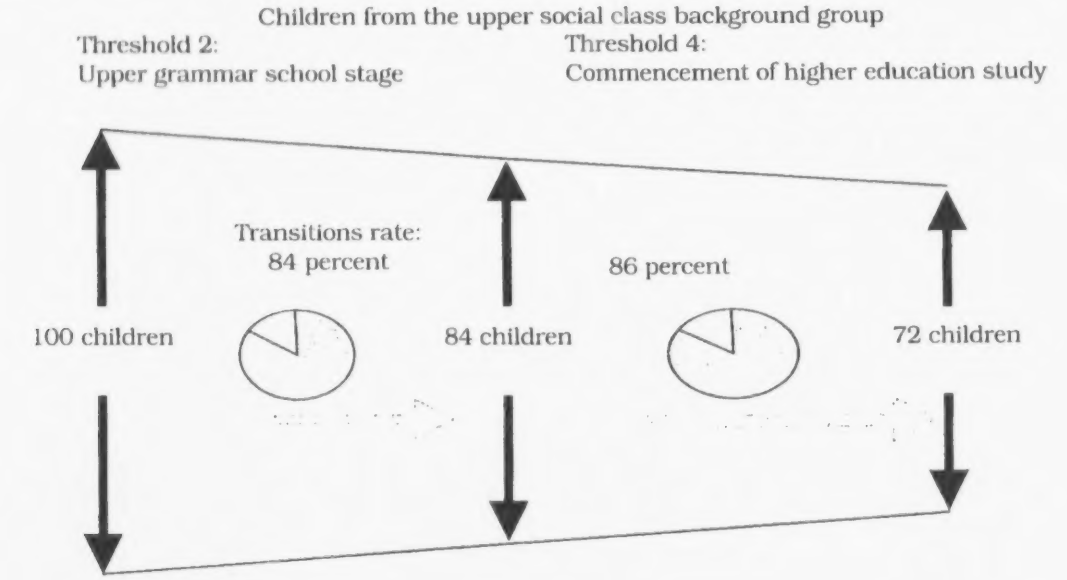
The selective function of education is multiplied as it works at several thresholds, as the schematic presentation of social selection, the education funnel, shows in Figure 2.

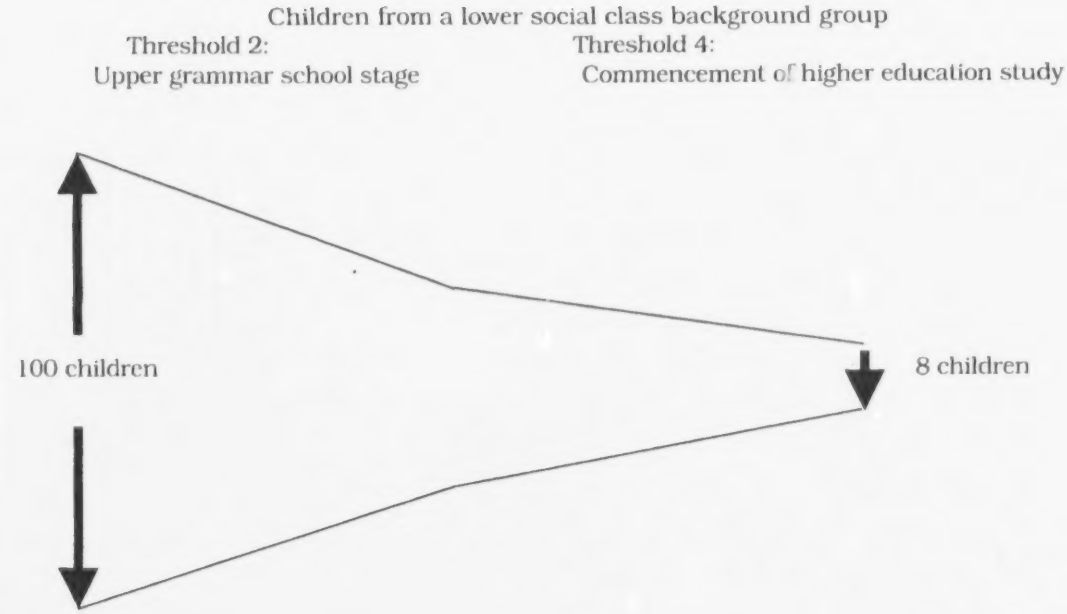
Figure 1: The participation of 18-21 year-olds in higher education by paternal occupational status over the 1985-1996 period (4th threshold)



Source: The 15th Social Survey (1998).

Figure 2. The education funnel: Schematic presentation of social selection - The educational participation of children of upper and lower class social background groups (in percentages)





Source: The 15th Social Survey (1998).

This example of different indications offered by the same indicator raises the issue of content validity. It proves to be a pressing problem even with descriptively "neutral" indicators for observation, for it is not by definition, but by use, that strategic function is determined.

2.2. Planning Indicators

In the expansion phase of the higher education system in Germany, planning standards were the most important indicators for policy action. They were the decisive instruments in the supply of adequate resources and in the control of exhausted resources.

Overall space standards regulated the size of building capacity according to different types of students and main fields of disciplines:

Example:

- 17 m^2 per full-time equivalent-student in engineering disciplines, at universities, and
- 5.7 m^2 per full-time equivalent-student in the social sciences, at universities.

"Refined" space standards described the size of different space categories (teaching, laboratories, communication, etc.) by which the overall space standards were to be broken down.

Student/staff ratios regulated the "density of instruction" (*Betreuungsdichte*) at all higher education institutions.

The most decisive guideline indicator with regard to capacity building in the German higher education system was and still is the curriculum norm (*Curricularnormwert-CNW*). The set of curriculum norms is applied as a formula:

$$s = CNW * x,$$

which is used for the allocation of study places. The "curriculum norm" (*CNW*) is the size of the teaching load requested per student in the respective study programme (Uthoff, 1995).

Example: In the Classical Music study programme, CNW = 1.1317. This means that for every student in this programme a teaching load of 1.1317 hours is requested.

The CNW multiplied by the numbers of students equals the overall teaching load of a department necessary to serve the demand for the student intake. According to the State regulation on "the exhaustive use of capacities", all departments offering programmes with *numerus clausus* have to accept the full number of applicants according to their teaching capacity.

The indicator formula behind the CNW-norm, which assumes the intention to exhaust the potential of capacities, also implies the fundamental aim that capacities should be provided and utilized consistently and evenly all over the country.

The uniformity of study place provision and its utilization has to be viewed as a unique feature and characteristic of the higher education system in Germany. It guarantees the broad distribution of high quality and the equal supply of social demand.

Taking the importance of all "planning indicators" into account, one has to ask if these standards and norms, which are disguised as indicators, fulfill the definition of what an indicator is. Guideline indicators do not "convey a general impression of the state of the situation", but structure the future state of the situation (Kaiser, 2003, in this volume, pp. 31-35).

In a higher education system which aims at the equal and even provision of study opportunities, indicators have a strong strategic impact on action. For this particular reason, norms and standards should be considered when "strategic indicators" at system-level are wanted. Frans Kaiser, too, draws attention to this function, when he states that strategic indicators should be "prospective".

This author is not quite certain if Kaiser had in mind these normative indicators when mentioning the "prospective" quality as additional criteria for strategic indicators.

Another reason for insisting that *Richtwerte* or planning norms be treated as a significant type of indicator is the fact that norms of standard provision or standard utilization can also be used to confront potential provision and utilization with real performance. The ratio of real to potential intake or output provides the capacity utilization rate of the system as a scale for assessing productivity.

Being governed by the paradigm of the equal opportunity policy of the 1980s, institutions of higher education used the capacity utilization rate primarily for purposes of adjustment. For instance, when they operated over capacity, their requests for more resources were based on this indicator.

The capacity utilization ratio proved to be the key indicator for the incremental growth of the demand-oriented policy of open access. When that policy changed, the purpose of this indicator also changed. The capacity utilization ratio is no longer a growth planning tool. It now serves as a scale for assessing productivity, the focus of the next section.

3. NEW MANAGEMENT INDICATORS

The new paradigm of the market and new management issues in higher education immediately brought about the necessity that indicators focus more on these core goals of the higher education system. They changed in purpose and perspective.

The purpose of the use of indicators is no longer that of controlling the evenness of the distribution of resources but that of revealing differences, ranks, and variability, and the reasons for differentiation.

Differentiation is taken as the expression of competition and competition as the instrument to assure quality and productivity without defining – at the risk of designating losers and winners – the optimum state of the quality of higher education in Germany. In this new perspective, the following issues – achievement, deregulation, globalization, and rationalization of costs – are regarded as crucial points of reference for the definition and use of indicators at system-level.

3.1. Achievements

The benefits of higher education are the crucial point of assessment. In the absence of data on financial benefits (profit), a set of output indicators is configured:

- the ratio of graduates to first year students;
- the ratio of graduates to staff members;
- the ratio of successful completion to drop-out;
- the proportion of graduates in the labour-force;
- the rates of employment and unemployment of graduates;
- the average amount of time a graduate needs during which to find employment;
- the current rate of expenditure per graduate;
- the current rate of expenditure per graduate in terms of the planned completion time.

The ratio of graduates to input dimensions (staff, time, and costs) serves as a substitute for measuring performance effectiveness. The labour force indicators serve as substitutes to measure the benefits of human capital investment.

Currently, in Germany, there is little interest in and a lack of methodology for using indicators for quality assessment. Peer review is hardly ever broken down into ordinal indicators (ranking lists). In the field of teaching at the level of higher education, the value added is neither assessed nor quantified in relative indicators.

3.2. Deregulation

Most of the indicators mentioned above are generated at institutional level. At system level, they are either used at highly aggregated level with regard to national framework planning and the setting of overall goals, or – and more frequently – for the bargaining process with institutions: for example, distribution of lump sum budgets to institutions by performance-funding or contract-funding. This necessity explains the preoccupation with cost-indicators.

These indicators serve as:

- a measure for the performance-oriented differentiation of funding for institutions and programmes;
- criteria for goal-achievement in contract funding;

- a means to designate criteria in incentive funding for selected innovative institutions.

To give an example, the source sheet for the Chemistry study programme is derived from a systematic collection of indicator sheets for every study programme offered by universities in five German *Länder* (Table 1).

At system-level, these indicators – primarily the costs per graduate indicator – are taken into account in deriving standard price clusters for State performance funding for institutions, without directly interfering with institutional management. Of course, considerations go further and will also affect the single institution: cutting costs, regional concentration of programmes, and merging of institutions.

Table 1. Programme-sheet for Chemistry: performance indicators

Chemistry Programme	Costs (in DM)			Staff (full-time equivalent)			Costs for instruction (in DM)			
	Overall	Direct	Indirect	Profs.	Others	Total	Total	Study-place	Per student	Per graduate
University of Hamburg	28,700,353	25,027,511	3,672,842	28.2	70.4	98.7	13,034,230	13,827	19,759	85,983
University of Bremen	12,932,671	6,342,131	6,590,541	17.0	28.0	45.0	5,345,031	9,718	27,194	179,206
University of Kiel	13,479,915	11,416,916	2,062,999	12.0	39.9	51.9	5,244,041	9,053	18,960	58,083
University of Oldenburg	18,772,547	8,306,592	9,522,133	13.0	27.0	40.0	6,904,880	14,998	22,404	117,416
University of Göttingen	28,960,252	21,531,520	6,535,615	22.0	67.0	89.0	10,954,066	16,503	16,383	71,988
Technological University of Braunschweig	16,507,187	12,429,052	2,767,650	18.0	63.8	81.8	6,675,613	9,176	18,170	52,807
University of Hannover	19,561,529	12,671,318	5,458,404	22.0	54.0	76.0	7,580,573	9,811	15,107	59,130
University of Rostock	10,379,239	8,583,771	1,795,468	12.7	54.0	38.3	4,108,976	7,834	38,258	279,361

Source: HIS, *Ausstattungsvergleich norddeutscher Länder* (2001).

3.3. Globalization

International indicators for the national comparison of different features of the higher education system have always been very popular in Germany, but more or less without any relevance for system-level decisions. This situation has changed since globalization became the core issue of internationalization. The concern for international competitiveness has caused the development of complex indicator-sets on international mobility (in- and outgoing mobility of students and staff [DAAD, 2001]) and has made the authorities more sensitive to the reception of indicators in the sphere of the national economy and of competency-development. OECD-EAG-indicators on "Financial and Human Resources Invested in Education", especially category B1, "Educational Expenditure Relative to Gross Domestic Product", and those relating to "Student Achievement", especially F1, "Mathematics Achievement of Students", and F2, "Differences

in Student Attitudes Towards Science", aroused self-critical interest and gave rise to further analysis and promotion-programmes (OECD, 2000).

The traditional indicators regarding access to education and participation, formerly viewed in the context of the basic principle of freedom of education, tend to be increasingly viewed in light of human capital investment and the worldwide competition of knowledge-based economies.

The challenging questions posed by UNESCO with regard to performance indicators refer only partially to the competitive side of internationalization. The rigours of worldwide competition and of self-interest in the use of these indicators are not made clear. Thus, illusions of a vision of balanced development among nations or between the principle of equity and the challenge of modernization are fostered.

3.4. A Student-Centered Approach

One of the fifteen areas designated in the UNESCO Declaration, *Higher Education in the Twenty-First Century*, as a priority field is the concept, "to place students and their needs at the center of national and institutional decision-makers' concern" (UNESCO, 1998).

This view is playing an increasingly important role in German discussions on higher education system development; however, it is predominantly couched in the terms of market considerations. In terms of market forces, students are called clients or consumers. In terms of modernization, they are regarded as allocation factors.

Indicators on:

- study-preferences for disciplines;
- transition rates between different levels of education;
- regional catchment areas;
- migration rates among *Länder*;
- success rates of mobilization schemes;
- life-time income of graduates;

are examples of indicators urgently needed for policy decision-making at system-level. Until now, there has been only a volatile set of indicators. Indicators are rather time-bound and problem-centered. They are neither connected with a theory of human capital investment, nor do they form an explanatory cluster with other indicators. Highly abstract OECD-EAG indicators, like "educational expectancy", which refer to a model of human capital investment, have found little acceptance in Germany.

4. TENTATIVE APPROACH TO THE RECONCILIATION OF OPPOSING STRATEGIC INDICATORS

In the case of Germany, the referential character of indicators can be demonstrated very clearly by confronting their use under shifting and opposing paradigms. Referential implications go much further than to the pure, direct indication-function of indicators (present situation, core goals,

and trends). The indication is strongly directed by the visions and strategies in force. Each vision implements its own set of indicators or even changes the face value of the same indicator. The indicative meaning of participation rates can be as different as the two sides of a coin.

At first sight, this double-bound substance of indicators should make anyone using them suspicious, especially when one is aware of the fact that most of the ideological connotations are conveyed in a hidden agenda.

In Germany, where two different visions of the function and development of the higher education system compete with each other and in reality have to co-exist, as both are codified by effective law and regulations, the use or abuse of apparently contradictory sets of indicators can be analyzed very clearly; yet, the outcome of this conceptual controversy is not clear.

A good example of this dialectical relationship is the application of indicators pointing, on the one hand, to the obligation of the State to provide study places of sufficient size and of equal quality in order to satisfy social demand and, on the other hand, the application of indicators which aim at the market-oriented regulation of the provision of study places. The optimal use of the capacity of the higher education system is the goal function of both.

In a portfolio-presentation, these two competing aspects can be visualized and related to each other. To take up the example of "Chemistry" once again: The source-sheet portrayed in Table 1 indicates the variation in teaching costs per graduate in the different chemistry programmes at the ten universities concerned.

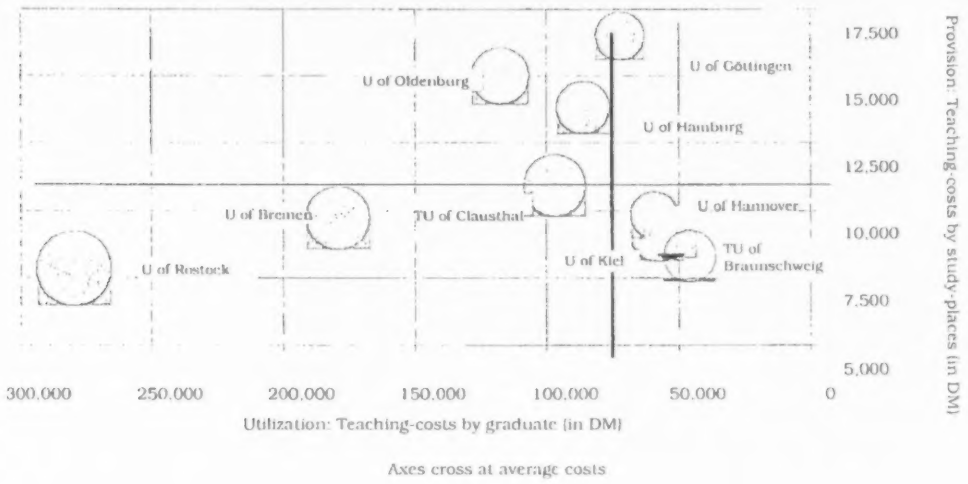
The variation in costs per graduate among the single programmes is extremely large. Production costs at the University of Rostock are six times higher than at the University of Bremen, as shown in Figure 3. If the values are clustered in terms of "over average" and "under average" costs per graduate, four universities are running their programmes with very low current costs per unit; another four, with high costs per unit.

Most of the variation can be explained by regional differences in the demand for study places. The Chemistry programme at the University of Rostock has only recently been opened. It is up to date; however, it has few applicants and has had very few first graduates. The universities with low unit costs are very attractive for applicants because of their size and the variety of their programmes. As long as applicants for study places can decide themselves where they will study, the German higher education system will have to live with the effects of under- and overload capacity and a respective variation of unit costs. Thus, the graph demonstrates on the x-axis the price of free choice of where to study.

Another perspective on cost analysis is portrayed by asking to what extent the study places provided vary in terms of costs, without taking into consideration the utilization of these study places. On the y-axis, the current unit costs per installed study place are positioned according to their level. The variation is modest compared to utilization costs. The highest costs per unit are only the double of the lowest costs. This result could be

expected according to the principle of provision of equal study opportunities.

Figure 3. The Chemistry/cost portfolio in selected universities in Germany: the provision of study places and their utilization



Source: *HIS-Ausstattungsvergleich* (2001).

The unit costs are again clustered by drawing a line between programmes with above average unit costs and below average ones. By combining the distribution of unit costs for graduates and for study places, the strategic question of whether or not increased investment in study places improves utilization and by so doing reduces the production costs of graduates can be partly answered. With the exception of the three universities in the segment of low capacity costs and low production costs, there seems to be an exponential correlation: the higher the capacity costs, the lower the production costs.

On the other hand, it might to be worthwhile analyzing the reasons for the existence of a "cheap cluster" (low input costs and low costs of production) through further investigations and additional indicators.

It would be beyond the scope of this article to continue with an interpretation of the empirical values. The aim of this exercise has been to demonstrate the heuristic value of bringing together sets of indicators that represent competing strategies for the steering of a higher education system and that have to be reconciled in a given higher education system having pluralistic aims. Moreover, the effort has aimed to offer an example of:

i) the confrontation of the two basic strategies that together constitute the shape of the higher education landscape in Germany;
ii) how the effects of these two strategies can be made visible by using different sets of indicators in a relational perspective;

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iii) how, by the implementation of this portfolio approach, priorities of action can be deduced from this way of mapping the indicators of competing goal systems.

5. CONCLUSION

With regard to the two competing strategies determining the higher education system in Germany, one can still claim that open access remains the major goal of higher education policy and that, on the basis of this consensus, market-mechanisms, in German society, are the adjusting counter-weights that protect against over-bureaucratization and serve as the warranty of effectiveness, quality-control, and new impulses.

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VII. Strategic Indicators for Higher Education Systems: Lessons from the French Experience

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Indicators are needed in order to assess the relative position of a country or to measure progress towards goals that have been set at a national or regional level in relation to missions assigned to higher education as a whole. They enable decision-makers to make decisions about action and to monitor the effects of a given policy.

A system comprises various components. Each component fulfills a function or a set of functions that limits its activity and its responsibility to a specific domain. The actions expected from such components, the goals that are given, are in a way subordinated to those of the whole system.

A higher education system is composed of operational units, universities, and other institutions of various kinds, with the task of delivering education and conducting research. It also includes agencies (ministries, funding bodies, research councils, and student welfare agencies) responsible for the co-ordination of some or all of the activities of the operational units. The relative weight of institutions and of agencies in a higher education system varies from one country to another. Highly centralized systems give a wide range of decision-making powers to coordinating agencies. Highly decentralized systems confer a large degree of autonomy to operational components.

"System level" indicators are sensitive to the structure of the higher education system. Although recent years have witnessed some convergence in the structures of national systems of higher education, there is still a significant diversity that makes it difficult to devise a set of indicators that could be applied to all the countries of the world.

As the various national systems face different constraints and unequal levels of development, it is likely that the priorities of countries will vary. What is strategic in the most advanced countries can be of little interest for the less advanced ones. Countries with more than half an age class enrolled in higher education obviously look for indicators that are far more sophisticated than those sought by countries that are still struggling to achieve universal basic education.

For a long time, basic indicators have been available for nearly every country in the world. These include student enrollments, graduation rates, and the resources allocated to higher education, like public funding and staff, etc. As the world enters the Twenty-First Century, it seems that this information is no longer adequate. The rapid development of the information and communication technologies in recent decades has altered both the needs of society and the means it can use to satisfy them. At the same time, the patterns of organization of society have also evolved. Higher education

has been given new missions and must confront new situations. New actors have entered the field and consider that they have a stake in it. Institutions are faced with competition from new providers and have to rethink the way they operate. Regulators and coordinating agencies are having to deal with increasingly complex systems with constantly shifting boundaries. New indicators are needed.

1. THE EXTENSION OF THE MISSIONS OF HIGHER EDUCATION

The traditional missions of higher education were basically the education of élites, the advancement of knowledge, and the preservation of culture.

Owing to the ever-increasing division of labour and specialization of knowledge, industry turned to higher education institutions and required that they contribute to economic development by raising skill levels and ensuring technological progress in all sectors of production. In particular, in recent years, higher education has been expected to support an expanding knowledge-based economy and to prepare for geographical and professional mobility for a smoother operation of labour markets.

At the same time, as social and human capital came to be a key factor in the creation of wealth and the promotion of welfare, higher education came to be viewed as a means for bringing about equality of opportunity among individuals and social groups.

2. MULTIPLE STAKEHOLDERS

After centuries of relative isolation, higher education has been attracting wide attention from the public. As the size of systems increase, new stakeholders appear and try to influence policy to put forward their specific goals. Academics, students, public agencies, industry, and local governments have been playing increasingly important roles in decision-making processes or trying to interfere with them. In many European countries, the funding of higher education has been diversified, enabling new stakeholders to influence the steering of institutions or of whole systems, provided they contribute resources. They too are interested in monitoring developments that affect them and are demanding new indicators.

3. TRENDS AND POLICIES IN EUROPEAN, PARTICULARLY FRENCH, HIGHER EDUCATION SYSTEMS

The last quarter of the Twentieth Century witnessed dramatic developments in higher education in most of Western Europe. Some of these developments were the direct consequence of the building of the European Union.

There has been the fact of democratization. In several countries, the proportion of a generation gaining access to some form of higher education jumped from less than 10 percent to about 50 percent. As a result, the proportion of graduates in the adult population has been growing steadily.

The move from élite to mass higher education has raised issues such as that of the lowering of the quality of education and of the downgrading of the employment possibilities available to graduates.

Such a large expansion in student numbers was matched by the creation of appropriate jobs only because higher education had been diversifying and differentiating itself. New programmes have been opened on the basis of the current or foreseen needs of the economy for new qualifications and competencies. Similarly, new types of institutions have been created when traditional universities were reluctant, or badly equipped, to embark on the type of diversification that the new institutions represented. Such action, in a way, has prevented a downgrading of the jobs offered to the rapidly growing number of graduates. However, it has created difficulties in regard to the assessment and maintenance of quality with the customary tools and concepts of traditional universities such as academic standards and peer-reviews.

The diversification and differentiation of higher education occurred mainly in sectors in which education and training for specific employment could be made more relevant by bringing in professionals who could participate in teaching and advise academics on curriculum. The expansion of such programmes is referred to in France as the *professionalization* of higher education (perhaps *vocationalization* would more aptly describe this phenomenon). Most of the innovations in curricula that have been introduced into French universities in the past thirty years have been of that kind.

Professional programmes, in contrast to the traditional course programmes for which little has been changed in the contents and methods of teaching, have attracted a growing number of students. These programmes cover a wide range of different types: short programmes (2 years) in the University Institutes of Technology (IUT) created in the late 1960s, undergraduate programmes like the Master's Degree programmes in Science and Technology (MST), and the offerings of the University Professional Institutes (IUP), or one-year postgraduate programmes such as the Higher Diploma of Specialized Studies (DESS). Their common feature is the participation of industry in the conception of curricula and in the actual teaching and training, either by providing part time and associate lecturers or by taking students into industrial internships (*stages*).

They also contrast with other programmes as far as access is concerned. While entrance to most French university course programmes is subjected only to the possession of a *baccalauréat*, the end-of-secondary-education diploma, professional programmes select their students at various stages of their studies.

The development of professional programmes has had a far-reaching effect on higher education. At various stages of their academic careers, students are offered "bridges" to enter different programmes, either in their universities or in other higher education institutions. The multiplicity of student "trajectories" makes it difficult to assess the efficiency of higher

education at institutional level, for students transferring from one institution to another may be treated as drop-outs.

The expansion of continuing education and training has also had a strong impact on the French higher education system. Many professional courses were first introduced experimentally as continuing education programmes. The principles of lifelong learning were recently translated into policy when universities and other higher education institutions were advised to review their programmes in order to facilitate the enrollment of continuing education students alongside "traditional" students. The task implied the introduction of modularity and flexibility in the way courses were organized. This channel is probably one of the main ones through which the use of the new information and communication technologies will be introduced into most institutions. The pressure on universities to open themselves to continuing education was stimulated by legislation providing for the accreditation of professional experience towards access or even the award of degrees.

The research sector of French higher education has also been affected by deep transformations. Research funding was separated from funding for teaching and made more dependent on competitive bidding on the basis of projects. The diversification of resources was encouraged with the effect of establishing new working relationships between industry and the academic world. Contract research money has come to play a significant role in the realization by academics that they are actors in the economic development of the country. University industrial subsidiaries, science parks, and small business incubators have become strong elements of the national policy to promote industrial innovation.

The internationalization of higher education took a new start with the creation of the ERASMUS student exchange programmes. It has slowly percolated through institutions and programmes. The new foreign student population had different needs and different purposes. As they were on short stays (one semester to one year), they insisted that their studies in a foreign institution be recognized in their own countries. They brought pressure to bear on faculty and academic authorities to introduce transferable credits and to engage in negotiations with their foreign counterparts to assess academic work on a comparable basis. This process strongly contributed to harmonization and convergence, both inside national higher education systems, in which many disciplinary idiosyncrasies could be found, and among countries. With more than 30,000 students sent abroad in 1998 (and even more received from abroad), European academic exchanges have had an impact on every institution and every programme.

4. IMPLICATIONS FOR THE CONCEPTION AND USE OF INDICATORS AT SYSTEM LEVEL

To a great extent, the phenomena occurring in higher education systems have become increasingly complex. Growing complexity challenges existing indicators. The use of simple indicators to compare the state of a system at different points in time may hide significant developments. Similarly, in international comparisons of higher education systems, the usual indicators may produce statements that appear, to an informed observer, to be obviously wrong. One way to resolve this dilemma would be to try adding new indicators more suited to specific situations. However, the information that could be gained from increased precision might turn out to prevent reliable comparisons.

In many countries, indicators have been devised which accurately describe idiosyncratic practices or situations. When put into international perspective, they no longer make sense. It is only when systems converge that it is possible to increase the amount of significant information by introducing new and more detailed indicators. Such a convergence is slowly taking place throughout the world in some of the activities performed in higher education systems. It can be accelerated when policy harmonization is decided upon inside a regional group of countries. At the European level, the common decision to create a European Higher Education Area will certainly have an impact on the definition and use of higher education indicators.

A rapid review of indicators that have been used or proposed in the French context for education and training (and leaving aside research and the other functions of higher education) will help to convey the point.

4.1. Financial Indicators

The use of financial indicators to assess a relative position or a degree of evolution is founded on the assumption that the value of the resources devoted to higher education reveals the quantity of higher education produced by a given country at a given time. A larger expenditure is presumed to be equivalent to more education, a smaller expenditure, to less. This assumption is acceptable if three broad conditions are met: *(i)* The level of economic development and the cost of the various inputs in the countries compared must be roughly similar. *(ii)* The use of resources must be measured in the same manner. *(iii)* The type and the quality of education must be comparable.

Comprehensive accounting for the resources used is almost impossible. Apart from public expenditure as measured by budgetary appropriations – which are quite well known in nearly all countries – it is usually difficult to rely on information available from other sources. In a few countries, a large portion of the total expenditure on education is borne by institutions that collect funds from various origins. Institutional accounts provide good

coverage of expenditures. In other countries, many similar costs are borne by different agents that provide funds or services to students or to institutions. A comparative analysis of student aid in the countries of the European Union conducted by EURYDICE has identified problems arising from the juxtaposition of various schemes funded by different administrations and local governments with possible cross-subsidization.

At a time when funding is becoming increasingly diversified, such problems are likely to increase. They are usually solved by opting for a narrow concept of educational expenditure that is easy to measure (but may be judged by experts as misleading). It is likely that the wider the group of countries to be compared, the narrower the concept.

An attempt to overcome the heterogeneity of systems in international comparisons is to calculate an indicator of effort by relating the amount spent to the total available resources: a ratio of higher education expenditure (public or total) to the total of public expenditure or the GDP. Such an indicator, which informs about the priority given to higher education by the country or its government, presents the same methodological flaws as does total expenditure.

When the size of the student population varies, a usual correction consists in calculating public or total expenditure per student. The view is that a student is a student regardless of the type of course programme in which he or she is enrolled. The introduction of short courses or the expansion of postgraduate programmes which directly affects the number of students enrolled in a national system will suggest an improvement or a worsening of the indicator.

Looking at higher education as an investment suggests the need to relate the total cost per student until graduation (the cost of a graduate) to income per capita. Production of a higher education graduate could represent twice or twenty times the annual average income of the population. It is undoubtedly a better measure of effort, but it does not indicate who bears the weight. If one knows the distribution of funding between public and private sources, one obtains a better idea of this effort.

4.2. Input Indicators

Indicators that relate to the various inputs of higher education, staff, equipment, and infrastructure are similar to financial indicators in that they usually infer quality or quantity of education from the amount or value of what is used to provide education. They can be reliably applied to comparisons in space or in time, if the structure of the inputs is stable and uniform. Staff-student ratios and numbers of computers per staff member or per student convey information when the related inputs are used in the same way. At a time when one type of input is substituted for another, information on volume or quality of the educational output cannot be inferred from such indicators.

As the new information and communication technologies make their way into higher education, such substitution is likely to take place. The

observation of individual institutions has shown that, for a time, the new ITCs are only added to existing inputs, for old teaching practices are retained alongside the new ones. Substitution starts only after a period of time. It is extremely difficult to get an idea of the rhythm at which this process takes place, especially at system level.

4.3. Indicators of Efficiency

Efficiency refers to the extent to which an organization achieves its goals. Economists customarily distinguish internal efficiency from external efficiency according to the level of the goals that are considered. Applied to the operation of a higher education system, internal efficiency might address a question such as: Does the system produce the highest number of graduates given the available resources? External efficiency, however, might ask if the system produces benefits to society that are sufficiently large to justify the value of the resources expended.

The indicators of the internal efficiency of the educational process include such data as duration of studies, dropout rate, graduation rate, etc.

Indicators of external efficiency pose questions about the relevance of education by looking at imbalances on the labour market and mismatches between qualifications produced and needed resulting in the unemployment of graduates, shortages of qualified labour, or the downgrading of graduate employment.

The first type of indicators of efficiency is made increasingly difficult as the individualization of student trajectories develops. When there is only one model of programme for the whole of higher education, say the BA or the BSc in three years, it is quite simple to measure dropout rates and to interpret them as signs of inefficiency. When students are allowed to reorient themselves and to embark on further studies at different stages of their student careers, measurements of failure or attrition are tricky, and conclusions about efficiency are dubious. The tendency is to stick to "traditional" trajectories even when they represent only a small part of the actual situation experienced by students. Lifelong learning, implying students moving in and out of individual institutions or of the system altogether, will certainly not clarify the picture.

Indicators of external efficiency are equally flawed. When looking at the labour market, it is difficult to disentangle what the result of the education system is from what the result of the economic situation of a country or of an individual industry is. In a few cases, a market situation can be considered as the product of an inefficient system, *e.g.*, graduate unemployment that endures over a period of economic expansion. But in most cases, no such clear answer can be given. The same would apply to variations in the length of the period between graduation and first employment.

4.4. *Quality Indicators*

In a way, external efficiency amounts to quality as judged by the labour market. Higher education has other purposes that could lead to a different and wider meaning for quality. The trouble is that these purposes are difficult or impossible to quantify. Student satisfaction could be an approach to quality, but, if applied to the period of study, the result would bear little relation to the role that society assigns to education. If viewed through an assessment of job satisfaction and the appropriateness of knowledge and competencies acquired to work and live well, such an indicator would make more sense, but the verdict would still be likely to be influenced by wider or unrelated circumstances.

Feeling oneself able to adapt to new situations and being equipped to move from one country to another certainly denote a quality education but of a type, unfortunately, quite difficult to translate into synthetic indicators that would be comparable through time and space.

Nevertheless, there is a need for qualitative indicators to measure the value that society sets for higher education missions and goals that go beyond the needs of the labour market and how well higher education institutions achieve these goals.

4.5. *Indicators of Access and Equity*

In the Western world, where mass higher education has been achieved, access and equity have become a less pressing concern at system level. In France, women enter higher education and graduate in larger numbers than do men. The same is true of students from different social backgrounds. Differences and possible discrimination occur within specific institutions or sectors of higher education. As the hierarchy of prestige for institutions or programmes varies widely from country to country, there is no point in elaborating indicators that would enable comparisons of different countries. It is, however, interesting and important to develop appropriate indicators in each country in order to monitor the respective internal situation.

5. CONCLUSION

Contrary to the impression conveyed by the numerous limitations and problems to which this article has pointed with regard to the elaboration of indicators for use at system level, such indicators are useful and should be developed. However, it is futile to try to design a battery of sophisticated indicators that could be applied to all systems of higher education. The already existing indicators, if more accurately calculated, could satisfy the needs of decision-makers in a number of countries. Highly specific indicators will still be needed by individual countries to keep track of policies adapted to their peculiar contexts. Within groups of countries with a sufficiently high degree of homogeneity, it is essential to produce new common indicators.

VIII. Problems Related to the Design and Use of System-Level Indicators for Higher Education in Poland

ROMAN Z. MORAWSKI

1. INTRODUCTION

From an engineering point of view, the Polish system of higher education may be considered as a complex, hierarchical control system. According to the engineering art, the design of such a system and its effective operation requires a precise definition of the goals of its functioning and reliable information as to its status, as well as mathematical measurements of the rate of achievement, *i.e.*, of the abstract distance between the current state and the desired state of the system. System-level indicators for tertiary/higher education are thus indispensable for the efficient management of the national system of higher education.

The diversity of the systems of higher education in various countries makes it practically impossible to understand the statistical indicators corresponding to a given national system outside of the system in question, without some explanatory information on the specific system and indicators. This principle is applicable, in particular, to the indicators currently used by the Central Statistical Office (*Główny Urząd Statystyczny – GUS*) in Poland. They are published every year by the end of September in a separate volume titled *Higher Schools and Their Finances in...* (here the year follows), and contain data as of 31 December, of the immediately preceding year *e.g.*, Central Statistical Office (2000).

Two groups of indicators characterize the Polish institutions of higher education, *viz.*: non-financial and financial indicators. Both groups are composed of simple indicators "which are expressed in the form of absolute figures and are intended to provide a relatively unbiased description of a situation or process" (Abercromby and Fielden, 2000). Below, certain basic categories are characterized that are used for structuring the statistical data in *Higher Schools....*

There are fourteen types of institutions of higher education in Poland, referred to hereinafter, for simplicity, as *higher schools*. These are, *inter alia*, universities, technical universities, business schools, medical academies, and maritime academies. They are classified according to their locations, *i.e.*, the town and the province (called a *województwo* in Polish), as well as according to their owners: State schools and non-State schools.

Polish higher schools offer four types of studies, *viz.*: regular studies (also called full-time or day studies), evening studies, extramural studies, and external studies. They may lead to BSc, MSc, or PhD degrees. The

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programmes leading to BSc or MSc degrees are offered in about one hundred study fields, classified into twenty-one groups of study fields (according to the International Standard Classification of Education). The programmes leading to PhD degrees are offered in about sixty-two scientific disciplines, classified into seventeen branches of science; *e.g.*, chemical disciplines, technical disciplines, and medical disciplines.

In the total population of students, the following groups are distinguished for statistical purposes: foreign citizens, foreign citizens of Polish origin (the so-called *Polonia*), women, handicapped persons, and age groups (18 and less-than-18-year-olds, 19-to-29-year-olds, 30 and over-30-year olds).

The employees of higher schools are subdivided into academic staff members (professors, associate professors, lecturers, *etc.*), and non-academic staff members (engineers, technicians, administrators, secretaries, *etc.*). They are also differentiated according to the formal qualifications they hold that have been confirmed by scientific titles and degrees. Two scientific degrees are awarded in Poland, *i.e.*, the PhD, being a regular doctoral degree, and the DSc, being a senior doctorate (the so-called *habilitation*). The BSc and MSc degrees are considered to be professional degrees, not scientific degrees. These degrees are awarded in scientific disciplines by the scientific councils of the faculties of higher schools or of research institutions of non-academic type. The highest academic qualifications are formally confirmed in Poland by the title of *Professor*, which is awarded by the President of the State.

2. NON-FINANCIAL INDICATORS

Part I of the document *Higher Schools...* lists fifty-three non-financial indicators (the table numbers indicated in the parentheses refer to Part I of the publication by the Central Statistical Office, (GUS, 2000), *viz.*:

AID1 – students receiving financial aid by kind of aid, type of school, and *województwo* (table 58);

AID2 – students in hostels and using the services of student food services by type of school and *województwo* (Table 59);

CON1 – post-graduate non-degree courses (Table 19);

EMP1 – academic staff and non-academic staff by type of school, position, and type of employment (Table 31);

GRA1 – graduates of MSc-level and BSc-level studies by type of school (Table 6);

GRA2 – graduates by type of school (Table 7);

GRA3 – graduates of MSc-level and BSc-level studies by *województwo* and type of school (Table 8);

GRA4 – graduates of MSc-level and BSc-level studies by groups of study fields (Table 9);

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GRA5 – graduates of regular studies by type of school, group of study fields, and study field (Table 45);

GRA6 – graduates of evening studies by type of school, group of study fields, and study field (Table 46);

GRA7 – graduates of extramural studies by type of school, group of study fields, and study field (Table 47);

GRA8 – graduates of external studies by type of school, group of study fields, and study field (Table 48);

GRA9 – graduates by group of fields of study and study field (Table 49);

GRA10 – graduates of non-State schools by group of study fields and study field (Table 50);

GRF1 – foreign graduates by type of school, group of study fields, and study field (Table 51);

GRF2 – foreign students enrolled in regular studies, by age and type of school (Table 52);

GRF3 – foreign students pursuing evening studies, by age and type of school (Table 53);

GRF4 – foreign students enrolled in extramural studies by age and type of school (Table 54);

SCI1 – PhD students by type of school (Table 20);

SCI2 – PhD and DSc scholarships for persons preparing their theses (Table 21);

SCI3 – PhD and DSc degrees (awarded by all institutions) by *województwo* and type of institution (Table 22);

SCI4 – PhD and DSc degrees (awarded by all institutions) by branch of science (Table 23);

SCI5 – PhD and DSc degrees (awarded by all institutions) by type of institution and branch of science (Table 24);

SCI6 – PhD degrees (awarded by all institutions) by age of recipient and branch of science (Table 25);

SCI7 – DSc degrees (awarded by all institutions) by age of recipient and branch of science (Table 27);

SCI8 – professor's titles (awarded by all institutions) by *województwo* and type of institution (Table 29);

SCI9 – professors' titles by branch of science (Table 30);

STF1 – foreign students and graduates by type of school and group of study fields (Table 13);

STF2 – foreign students and graduates by *województwo* and type of school (Table 14);

STF3 – foreign students and graduates of Polish origin by type of school and group of study fields (Table 15);

STF4 – foreign students and graduates of Polish origin by *województwo* and type of school (Table 16);
STF5 – foreign students by type of school, group of study fields, and study field (Table 17);
STF6 – foreign students and graduates by continent and country of origin, including foreign students of Polish origin (Table 18);
STH1 – handicapped students pursuing regular studies by type of school, group of study fields, and study field (Table 55);
STH2 – handicapped students enrolled in evening studies by type of school, group of study fields, and study field (Table 56);
STH3 – handicapped students pursuing extramural studies by type of school, group of study fields, and study field (Table 57);
STU1 – students by type of school (Table 1);
STU2 – freshmen by type of school (Table 2);
STU3 – students in higher schools by *województwo* and type of school (Table 3);
STU4 – freshmen by *województwo* and type of school (Table 4);
STU5 – students by group of study fields (Table 5);
STU6 – newly-admitted students by type of school (Table 10);
STU7 – students in extramural studies by age and type of school (Table 44);
STU7 – students in regular studies by type of school and group of study fields (Table 32);
STU8 – students in regular studies by town, type of school, and *województwo* (Table 33);
STU9 – students in evening studies by type of school, group of study fields, and study field (Table 34);
STU10 – students in evening studies by type of school and *województwo* (Table 35);
STU11 – students in extramural studies by type of school, group of study fields, and study field (Table 36);
STU12 – students in extramural studies by type of school and *województwo* (Table 37);
STU13 – students in external studies by type of school, group of study fields, and study field (Table 38);
STU14 – students in external studies by type of school and *województwo* (Table 39);
STU15 – students in regular studies by age and type of school (Table 42);
STU16 – students in evening studies by age and type of school (Table 43).

3. FINANCIAL INDICATORS

Part II of the document, *Higher Schools...*, lists twenty-seven financial indicators (the table numbers indicated in the parentheses refer to Part II of Central Statistical Office (GUS, 2000), *viz.*:

COS1 – costs and their structure by type of school and kind of activity (Table 9);
COS2 – costs of education *per capita* by type of school (Table 18);
EXP1 – public expenditure on higher education as compared to 1990 (Table 2);
FUN1 – special funds of schools by fund and type of school (Table 14);
FUN2 – percentage of education costs covered from the assistance fund for students and the school scholarship fund by type of school (Table 15);
FUN3 – input-output management of the assistance fund for students by type of school and kind of assistance (Table 16);
FUN4 – distribution of assistance funds for students by type of school and kind of assistance (Table 17);
ICF1 – income, costs, and the financial outcomes of schools by type of school (Table 4);
INC1 – operational income of schools by type of school Table 5);
INC2 – operational income structure by type of school (Table 5.1);
INC3 – operational income structure by kind of activity (Table 5.2);
INC4 – operational income structure by type of school – for State and non-State schools separately (Table 5.3);
INC5 – school income from teaching activities by type of school and source of income (Table 6);
INC6 – structure of school income from teaching activity by type of school (Table 6.1);
INC7 – structure of school income from teaching activity by source of income (Table 6.2);
INC8 – structure of school income from teaching activity by type of school – for State schools and non-State schools, taken separately (Table 6.3);
INC9 – school income from teaching activity by type of school and source of income (Table 7);
INC10 – structure of school income from teaching activity by type of school (Table 7.1);
INC11 – structure of school income from research activity by source of income (Table 7.2);
INC12 – structure of school income from research activity by type of school – for State schools and non-State schools separately (Table 7.3);
INC13 – school income and costs by type of school and kind of activity (Table 8);
INC14 – income and costs structure by type of school (Table 8.1);

INV1 – investment outlays in higher education as compared to 1990 (Table 3);
INV2 – investments and renovation costs in schools by type of school (Table 13);
RES1 – gross financial result of schools by type of school (Table 10);
RES2 – charges on gross financial result of schools by type of school and kind of charge (Table 11);
RES3 – net financial result of schools by type of school (Table 12).

4. POLISH INDICATORS *VERSUS* WORLD DECLARATION OBJECTIVES

The World Conference on Higher Education, *Higher Education in the Twenty-First Century: Vision and Action* (Paris, October 5-9, 1998) confirmed the need for the renewal and the re-orientation of higher education at the system and institutional levels. The two major documents of the Conference – *Higher Education for the Twenty-first Century: Vision and Action* (the so-called World Declaration) (UNESCO, 1998a), and *Framework for Priority Action for Change and Development of Higher Education* (the so-called Priority Action Plan) (UNESCO, 1998b) – proposed the conceptual framework, the main directions of the reform, and their governing principles. The *World Declaration*, in particular, defined four major objectives, as follows:

- Promotion of access to higher education based on merit and addressing the areas of equal opportunity; seamless and open access to higher education and assistance to minorities and the disadvantaged.
- Modernization of higher education systems with a focus on access rates and overall participation rates; funding for research and development, and review of international trends, including fees and mobility trends.
- Renovation of institutions of higher education in the areas of academic quality, curriculum relevance, research links and performance, staff assessment, and international co-operation.
- Closer linkages with society; lifelong sources of professional training and the development of entrepreneurial skills.

The above objectives were used by the authors of a report (Abercromby and Fielden, 2000) to design a guide for UNESCO Member States to test the effectiveness of their higher education policies at both system and institutional levels. Taking into account that "governance and management arrangements differ among institutions and countries, depending on factors such as size, mission, and culture", they suggested a set of principles and of self-challenge questions that can be applied to all institutions and systems. The authors also gave an example, in the Annex of their report, that showed how the commonly used indicators could be assigned to the UNESCO framework for higher education. That example has been used here for the assessment of the sets of indicators listed in Sections II and III. The result of this assessment is shown in Table 1.

Table 1. The correspondence of the indicators published by the Central Statistical Office of Poland (GUS, 2000) with the objectives defined in the UNESCO World Declaration (UNESCO, 1998a).

GOALS	OBJECTIVES	INDICATORS
Equality of access to institutions of higher education regardless of race, sex, language, religion, age, economic, and social distinctions, and/or physical disabilities.	Promotion of access based on merit (Social – equal opportunity; economic assistance to minorities and the disadvantaged)	Indicators portraying the degree of access to higher education: AID1-2, CON1, STF1-6, STH1-3, STU1-16, EXP1, FUN1-4
To gauge the strength of the link between higher education institutions and research.	Modernization of Systems (Funding - higher education research).	Indicators portraying the links between higher education institutions and research include: SCI1-9, INC3-4, INC9-12
To gain an indication of the role of higher education as a catalyst for the entire system of education.	Modernization of Systems (Higher education funding and overall participation rates).	Indicators portraying the catalytic impact of higher education on the entire education system: STU2, STU4, STU6, EXP1
Ease of choice and flexibility of entry and exit points to institutions of higher education.	Promotion of access based on merit (Cultural – seamless and open access to higher education).	Indicators portraying student enrollment rates relating to the type and mode of tertiary institutions: STU1-16
To strengthen the link between higher education and research institutions.	Institutional effectiveness (Research links and performance)	Indicators portraying the links between higher education and research: EMP1, SCI1-9, COS1, INC3, INC9-12
To gain an indication of the level of collaboration between higher education institutions and different sectors of society; to ensure that higher education and research contribute to local, regional, and national development.	Institutional effectiveness (Research links and performance)	Indicators showing the collaboration in R&D: EMP1, INC3, INC9-12
Fulfillment of human, material, and financial commitments made to higher education in particular, by the state, over the past decade.	Modernization of systems (Human development and higher education funding)	Indicators showing whether or not financial/human commitments made to higher education have been fulfilled since 1990: EXP1
To measure the participation and decision-making roles of women at all levels and in all disciplines in higher education.	Promotion of access based on merit (Social – equal opportunity)	Indicators portraying change in distribution by sex in higher education: EMP1, GRA1-9, GRF1-4, STU1-16
To gain an indication of the national and international mobility of the teaching staff and students.	Modernization of systems (Mobility trends)	Indicators portraying the degree of international student mobility: STF1-6
To measure the degree of autonomy awarded to institutions of higher education and research in order to fulfill their obligations to society.	Institutional effectiveness (Autonomy and performance)	Indicators portraying the funding sources for research and development: ICF1, INC1-14, INV1-2, RES1-3

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GOALS	OBJECTIVES	INDICATORS
To raise enrollment levels and to expand the level of access to higher education of minorities and the disadvantaged in the public and the private sectors.	Promotion of access based on merit (Economic assistance to minorities and the disadvantaged).	Indicators illustrating the shifts in enrollments in higher education over time and public and private financial support for minorities/disadvantaged students: EXP1, FUN1-4
To provide complementary training to enter the world of work from secondary education and to facilitate a range of gateways for persons wishing to gain entry into higher education institutions.	Society and work (Lifelong source of professional training).	Indicators portraying the shifts in the percentages and the numbers of students enrolled in different types of tertiary institutions: CON1, STU2, STU4, STU6 for 1995-1999
Higher education institutions establish and foster their missions and degree courses, which contribute to the efforts of regions to reach an environmentally sustainable level of economic and social development and cultural creativity.	Institutional effectiveness (Curriculum and course relevance).	Indicators revealing the shifts in the numbers of graduates over time, by study field: GRA4-10, SCI1-6
How well higher education institutions abide by the rules of ethics and scientific and intellectual rigour, and a multidisciplinary and trans-disciplinary approach.	Institutional effectiveness (Quality)	Indicators showing the origins of R&D funds and where these funds are then distributed: EMP1, INC9-12
How well institutions have established systems of access for the benefit of all persons who have the necessary abilities and motivations to pursue higher education.	Institutional effectiveness (Participation and access)	Indicators showing the success of systems of access: CON1
To measure how well higher education institutions contribute to the sustainable development of society through the analysis of emerging social, cultural, economic, and political trends.	Institutional effectiveness (Quality; curriculum; research performance)	Indicators portraying the numbers of persons undertaking research: EMP1
To measure how well university faculty members participate in teaching, research, tutoring of students, and steering of institutional affairs.	Institutional effectiveness (Staff participation and assessment)	Indicators portraying staff breakdown: EMP1
To gauge how well higher education institutions are serving the community, through their approach to the analysis of challenges, problems, and different subjects.	Institutional effectiveness (Curriculum and course relevance; research links and performance; ethos).	Indicators showing how institutions of higher education serve their communities through the analysis of challenges, problems, and different subjects: GRA1-10, SCI4-7,STU7, STU9, STU11, STU13

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GOALS	OBJECTIVES	INDICATORS
To measure the promotion and the development of research in all disciplines by the higher education institution.	Institutional effectiveness (Research links and performance)	Indicators portraying the discipline of higher education: STU1-16
To measure higher education institutional programmes aiming at removing inequalities related to sex in curricula and research and at balanced representation among all levels of management.	Promotion of access based on merit (Social – equal opportunity).	Indicators indicating the breakdown by sex in tertiary institutions: GRA1-10, STU1-16
To gain an indication of the student support offerings of higher education institutions.	Promotion of Access on Merit (Social – equal opportunity).	Indicators showing the type and category of student support: AID1-2, FUN1-4
How well governments and industry support closer links between higher education and the world of work, so as to facilitate the employability of graduates who will increasingly be required not only to be job seekers but also to become job-creators.	Society and Work (Development of entrepreneurial skills – higher education to turn out job creators and social responsibility.)	Indicators portraying the sources of funds (government, productive enterprise, foreign, and other funds) to fund research and development INC9-12
How well higher education institutions are open to adult learners through different contexts and ensuring that credit is transferable within and between institutions, sectors, and states.	Promotion of Access on Merit (Cultural – seamless and open access to higher education)	Indicators showing the extent to which education institutions are open to adult learners: CON1
To measure how well higher education institutions are setting up partnerships and systems as a means to bridge the gap between rich and poor countries in the vital areas of knowledge production and application.	Institutional Effectiveness (International co-operation activities)	Indicators portraying the distribution of foreign students by country, region, etc.: STF6

Source: The author.

The Central Statistical Office (GUS, 2000) contains very limited information on the research activities of higher education institutions in Poland. For the time being, no statistical document is being published by the Central Statistical Office that systematically presents – year by year, in the same logical framework – indicators relative to research and development. Such indicators have been available, since 1994 in the statistical bulletins published twice a year by the Directorate for Science, Technology, and Industry of OECD under the title, *Main Science and Technology Indicators*. Unfortunately, these bulletins are not widely used by decision-makers and managers of higher education institutions in Poland. The situation may change soon because the Central Statistical Office is going to publish, on a regular basis, a bulletin entitled *Main Science and*

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Technology Indicators that will be based on the same system of indicators as those recommended by OECD, in the *Frascati Manual* (OECD, 1993). A dictionary of the definitions of concepts relative to the statistics of science and technology has already been published (GUS, 1999).

5. COMMENTS AND CONCLUSIONS

A comparison of the results of the analysis portrayed in Table 1 with the list of indicators that are currently available, recommended for data collection, and stated in the Annex to Abercromby and Fielden (2000), reveals the enormous amount of work that must be accomplished by the Polish statistical services to meet UNESCO expectations. This amount of work turns out, in practice, to be even greater than estimated on the basis of this comparison, owing to the observation that the definition of the indicators already being recorded requires serious revision. An overview of some of the relevant problems follows.

First, some of the attributes of a student, that were indisputable in the past, have become vague or fuzzy given the recent changes in the systems of education. In a so-called flexible study system, a student is allowed to define individually not only his or her programme of study but also the pace of advancement in his or her course programme. Consequently, the assignment of the student to a semester or year of study is becoming problematic; what can be reliably recorded by the time of registration is the percentage of the programme requirements satisfied. The quantification of this indicator is much more accurate than the quantification of semesters or years of study completed.

Another problem is related to the fact that undergraduate students are permitted, under certain conditions, to skip the BSc diploma and to work for the MSc diploma in order to earn it rapidly. It is difficult to say whether they are graduate or undergraduate students, *e.g.*, a month before receiving a Master's degree.

If the academic staff is considered, numerous statistical problems result from the diversification of the teaching load and from the simultaneous employment of Polish professors in various schools. The statistics based on the numbers of full-time and part-time employees may turn out to be very unreliable for many reasons:

- Unlike in the past, two part-time positions are not equivalent to one full-time position, but to various possibilities ranging from 0.2 to 1.8;
- The teaching loads of two persons having identical academic positions may vary as much as 1:3 owing to the extra paid hours of work undertaken by one of them;
- A university professor may be employed in several schools and counted by each of them as its employee.

The most serious methodological problems appear when trying to estimate correctly the total costs of education *per capita*. There are several sources of ambiguity:

- The indicator, "costs of education per student per year", seems to be outdated as it does not fit the reality of flexible and diversified systems of study. The cost of the whole cycle of education leading to a diploma would be a viable alternative;
- The costs related to the salaries of university teaching staff should be divided among their principal activities: teaching and research. There are no clear principles that would justify any proportion for such a division.
- The same applies to the costs of administration, investments, and modernization; the costs of laboratory equipment and literature; etc.;
- The links between teaching and research are particularly tight at the graduate level; consequently, the problem of separating costs is becoming even more complicated.

Taking the difficulties identified above into account, one should think about priorities rather than about the whole far-reaching programme of the design and use of indicators. Simple indicators related to students, staff, and school finances should first undergo careful revision and discussion, both at national and international level. Such an approach would serve as a protection against the elaboration of a devastating bureaucracy.

The last (but not the least problem) to be considered seriously is that of indicator uncertainty. From an engineering point of view, this problem is a standard one in the science of measurements, but one that is underestimated or overlooked by the statisticians of education; *re.*, evidence in the Central Statistical Office (GUS, 2000) and OECD (2000).

According to the engineering art, the design of a system of effective management in higher education requires reliable information about its state – reliable does not necessarily mean certain, but rather uncertain, with a known level of uncertainty. Every year, when the author's institution, the Warsaw Technological University, prepares its data for the Central Statistical Office, it must deal with numerous ambiguities by the taking of arbitrary decisions. Probably all institutions follow the same pattern, and one can assume that an accumulation of such decisions may produce statistically significant by-effects. But there are no instruments in use to identify or to quantify these. Consequently, the final documents do not contain any information on the uncertainty of indicators.

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IX. Romanian Perspectives on the Design and Use of System-Level Indicators in Higher Education

PANAITE NICA

1. INTRODUCTION

This study analyzes the design and implementation of system-level indicators for higher education from the Romanian perspective. For each of the relevant domains (*i.e.*, institutions, administration, performance evaluation, financing, and management), the major evaluation indicators are identified and the compatibility between these indicators and those of UNESCO is also discussed.

A new set of evaluation indicators for use at institutional level is proposed. It could be used for the ranking of Romanian universities. It has been partially tested in Romania, and the results have been made available to the universities concerned. An analysis of the overall design of the UNESCO *System-Level Indicators for Higher/Tertiary Education* is presented.

2. CONSIDERATIONS REGARDING THE DESIGN OF SYSTEM-LEVEL INDICATORS FOR HIGHER EDUCATION

The indicators for the evaluation of higher education employed in Romania, like those used in other countries, are strongly determined by the characteristics and particularities of the respective higher education system and the way in which it is organized.

The UNESCO evaluation indicators for higher education, like any international statistics, can be assessed according to the following fundamental criteria:

i. Their elaboration of a perception of the status (*i.e.*, the level for any given year) and the dynamics (*i.e.*, the trend of changes over a given period) of, and environmental factors (*i.e.*, international, regional, national, or local) regarding the implementation of the vision of higher education as formulated in *Higher Education in the Twenty-First Century* (UNESCO, 1998a), and the *Framework for Priority Action....* (UNESCO, 1998b).

ii. Their setting of a level of data compatibility by the definition of each particular indicator as precisely and as accurately as possible in order to avoid confusion or improper use.

iii. Their fixing of a relevant degree of indicators for different categories of users. A preliminary list of such categories of users could be UNESCO and other international institutions (*i.e.*, the World Bank, OECD, the European Commission), national institutions, universities, and other

higher education institutions in each country, and, last but not least, the individuals directly involved in the processes of higher education, *i.e.*, professors and students.

iv. The extent to which they aggregate at each of the following two levels:

- *at the level of different areas of applicability, i.e.*, at the university, country, and regional levels (considering not only geographical location, but also the level of development, etc);
- *in terms of primary indicators which measure a single aspect with all-encompassing indicators referring to more general phenomena.* This type of aggregation should be achieved based on a model of aggregation which allows for and takes into account the possible existence of different priorities, which may change over time, or various degrees of fulfillment of set objectives.

The author believes that in designing a system of evaluation indicators for higher education, the usability of the information inherent to such a system, assessed in terms of its relevance for strategic decisions to be taken by the users of the system, should constitute a major factor.

Therefore, special attention should be paid to identifying:

- *the categories of users* of the system of indicators: UNESCO and other international institutions (*i.e.*, The World Bank, OECD, the European Commission), national institutions, universities, and other higher education institutions in each country, professors, and students;
- *the types of decisions and of the information to be extracted from the system of indicators.* These will be a function of the mission, the objectives, and the responsibilities of the different types of users mentioned above.

3. CHARACTERISTICS OF THE HIGHER EDUCATION SYSTEM OF ROMANIA AND THEIR RELATION TO EVALUATION INDICATORS

3.1. The Organization of the Higher Education System and the Types of Educational Programmes

As an integral part of the Romanian national education system, the higher education system consists of both public and private institutions. Higher education is provided in education and research institutions – universities, academies, conservatories, and academic colleges.

Higher education institutions may operate legally after their functioning has been authorized by the Government and approved by the National Council for Academic Evaluation and Accreditation.

The public higher education sector in Romania includes forty-nine public universities which can be classified according to the dominant profile of their curriculum: complex profile universities (mainly social-humanistic and scientific), technical universities, medical universities, agricultural science universities, veterinary medicine universities, and art universities.

Numerous private education institutions (over eighty universities) have been set up as foundations since 1990, covering all forms of education, from nursery schools to universities. In order to control this rapid growth, the *Law on the Accreditation of Higher Education Institutions and Recognition of Diplomas* was passed in December 1993.

The most significant difference between public and private higher education lies in the ways in which they are respectively funded. Public higher education institutions are financed mostly from the state budget. Tuition fees and other individual incomes represent a secondary and complementary source of financing.

Private higher education institutions are mainly self-financed: they support themselves from tuition fees and sponsorships. Provided they are accredited, they are eligible to compete for state budget funds, such as development funds, research funds, and post-graduate scholarships.

Higher education institutions usually include several faculties, colleges, and departments. The faculty represents the functional basic unit of the higher education institution and is organized in sections and departments. The Romanian higher education system offers full-time courses, evening courses, part-time courses, and distance learning in the following types of programmes (Table 1).

Table 1. Types of academic programmes in Romanian higher education institutions

Level of studies	Types of academic programmes	Years	Diploma
Level 1: Undergraduate programmes	Short-term higher education programmes	3	College Diploma
	Long-term higher education programmes	4 - 6	University Diploma
Level 2: Postgraduate programmes	Advanced studies	1	Diploma of Advanced Studies
	Master's degree studies	1 - 2	Master's Diploma
	Further education academic courses	0.5 to 1	Further Education Diploma
	Postgraduate academic studies	2 - 3	Diploma of Postgraduate Studies
	Doctoral studies	4 - 6	Doctoral Diploma (PhD)

Source: The author.

Rapid growth occurred in the numbers of students during the 1989-2000 period, as reflected in the improved performance assessed as based on UNESCO indicators. This process resulted in improvements in terms of performance, through an increase in the level of student enrollment in higher education. At the same time, however, it also led to the persistence of some dysfunctions regarding the distribution of students by specialized study fields in the public universities. The discrepancies in the numbers of students by profile led to the complete funding of certain specialties from the state budget, while others were left almost entirely to the private institutions, a result which had negative effects upon the quality of the teaching process and the efficient use of the funds budgeted for education.

In 1990, Romanian education had a non-symmetrical position in comparison to that of other European countries, the former socialist

countries included. According to UNESCO statistics, the structure of the educational profile in Romania continues to be essentially different from that of other European countries – and it basically retains the structural characteristics of education in the period prior to 1990. The development of private higher education in Romania, especially in the fields of economics, law, the social sciences, and medicine, as well as the great discrepancies between public and private institutions, reflect, so far as competition on entrance examinations is concerned, the contradiction between the number of places financed from the state budget and actual social demand for higher education.

3.2. Higher Education Management

At national level, for almost half a century, the Romanian education system was extremely centralized. After 1989, a flexible higher education policy was designed under a new *Law on Education* (1995). This policy aims at strengthening institutional autonomy by decentralizing decision-making and the management of higher education. This law is now being implemented by the Ministry of National Education, assisted by advisory bodies and in consultation with the national scientific associations to which the academic staff members belong, and nationally acknowledged student organizations as well as the teaching staff unions.

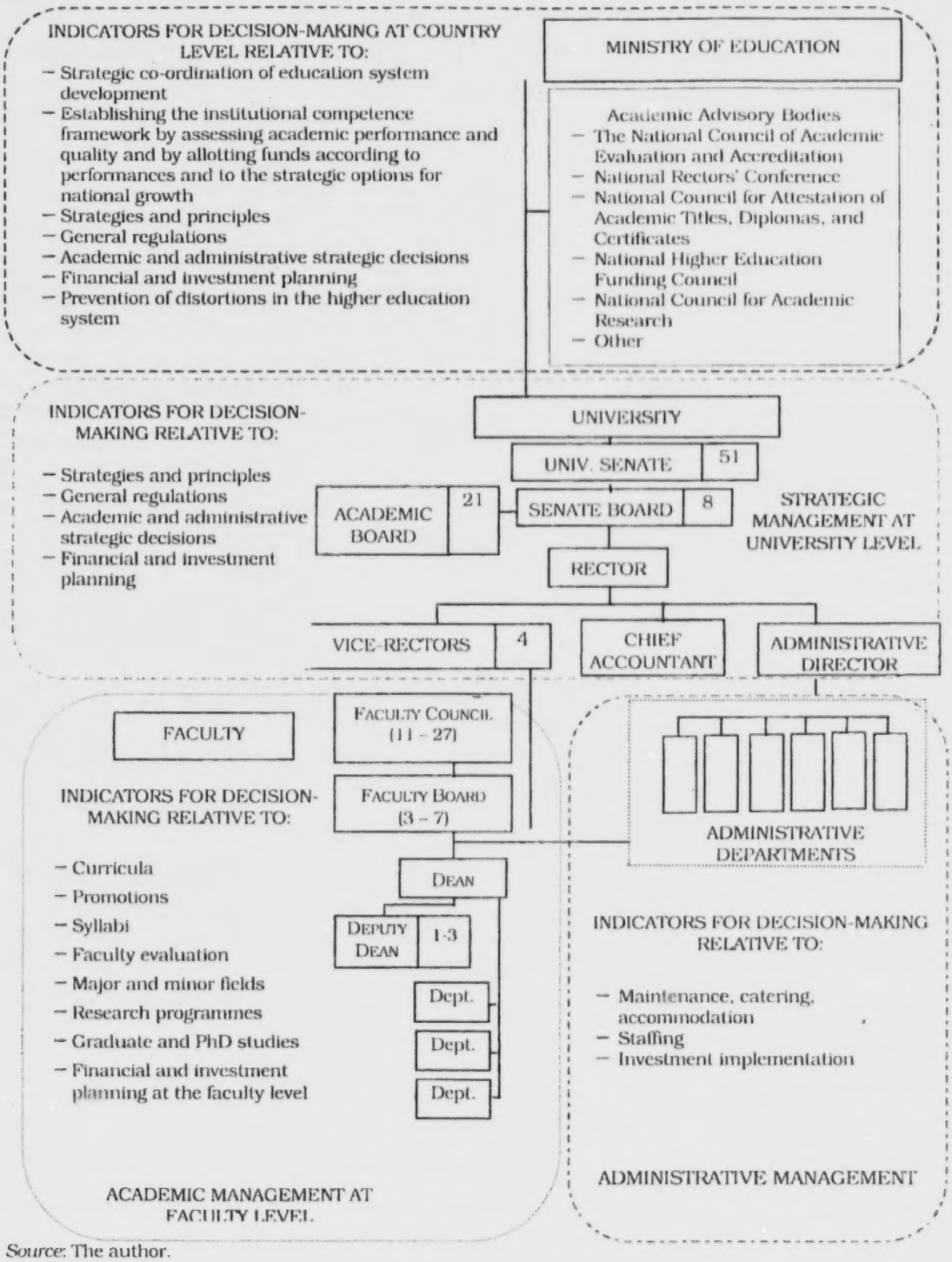
The Ministry of National Education initiated the establishment of academic advisory bodies (see Figure 1), to which it has delegated responsibility for establishing strategies, adopting procedures, and monitoring various aspects of education, in accordance with its own mission and objectives, as well as with the fundamental principles of higher education reform in Romania. The composition of these councils includes exclusively academic staff, usually nominated by the most important universities, in accordance with their respective competencies.

In the elaboration of strategies, rules, regulations, and legal initiatives, the Ministry of National Education works in close co-operation with academic advisory bodies and higher education institutions. The major responsibility of both the Ministry and the Councils is the elaboration of broad strategies. Decisions are based on a combination of the following statistics:

- international statistics, including UNESCO statistics;
- official national statistics, prepared by the Romanian National Commission for Statistics;
- the Ministry's own statistics, as well as those of the Councils;
- statistics prepared by various education institutions.

It should be noted, however, that, with the exception of the official statistics prepared by the National Commission for Statistics, a unified, well-structured, and integrated system for providing information and evaluation indicators at national level has not yet been achieved. As a consequence, limited access to such information, as well as certain

Figure 1. Responsibilities of higher education institutions in Romania


INDICATORS FOR DECISION-MAKING AT COUNTRY LEVEL RELATIVE TO:
– Strategic co-ordination of education system development
– Establishing the institutional competence framework by assessing academic performance and quality and by allotting funds according to performances and to the strategic options for national growth
– Strategies and principles
– General regulations
– Academic and administrative strategic decisions
– Financial and investment planning
– Prevention of distortions in the higher education system
MINISTRY OF EDUCATION
Academic Advisory Bodies
– The National Council of Academic Evaluation and Accreditation
– National Rectors' Conference
– National Council for Attestation of Academic Titles, Diplomas, and Certificates
– National Higher Education Funding Council
– National Council for Academic Research
– Other
INDICATORS FOR DECISION-MAKING RELATIVE TO:
– Strategies and principles
– General regulations
– Academic and administrative strategic decisions
– Financial and investment planning
UNIVERSITY
UNIV. SENATE 51
ACADEMIC BOARD 21
SENATE BOARD 8
STRATEGIC MANAGEMENT AT UNIVERSITY LEVEL
RECTOR
VICE-RECTORS 4
CHIEF ACCOUNTANT
ADMINISTRATIVE DIRECTOR
FACULTY
FACULTY COUNCIL (11 – 27)
FACULTY BOARD (3 – 7)
INDICATORS FOR DECISION-MAKING RELATIVE TO:
– Curricula
– Promotions
– Syllabi
– Faculty evaluation
– Major and minor fields
– Research programmes
– Graduate and PhD studies
– Financial and investment planning at the faculty level
DEAN
DEPUTY DEAN 1-3
Dept.
Dept.
Dept.
ACADEMIC MANAGEMENT AT FACULTY LEVEL
ADMINISTRATIVE DEPARTMENTS
INDICATORS FOR DECISION-MAKING RELATIVE TO:
– Maintenance, catering, accommodation
– Staffing
– Investment implementation
ADMINISTRATIVE MANAGEMENT

Source: The author.

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incompatibilities inherent in the design of indicators, makes the process of measurement and evaluation ambiguous and, at times, difficult, which means that an accurate assessment of the real situation cannot always be achieved.

The content of the system of indicators for higher education employed at different levels (*i.e.*, the Ministry, advisory bodies, universities, and faculties) was designed so as to convey information which would allow decision making based on specific spheres of competence (Figure 1). At the same time, such indicators should reveal the connections and relationships present both at the horizontal level (among functional domains, *i.e.*, the educational process, scientific research, academic evaluation and accreditation, financing, etc.) and at the vertical level (among structural components).

The indicators corresponding to functional domains, even though strongly influenced by the actual content of activities, should be designed to convey information that can be applied, directly or indirectly (based on certain aggregation models), in other domains as well, without creating a need to re-create or to replicate the existing databases. This objective has not been accomplished, as yet, in the Romanian higher education system.

3.3. Performance Evaluation

The performance evaluation of Romanian higher education institutions comes within the responsibility of the National Council for Academic Evaluation, Authorization, and Accreditation (NCAEAA).

According to the Law on Accreditation, all existing higher education institutions and all new academic programmes are subject to performance evaluation. There are several stages in the evaluation and accreditation procedure.

- *Provisional Licensing.* Any institution, which offers a new educational programme or establishes a new faculty or new college, must apply to NCAEAA for provisional licensing. Graduates of provisionally licensed programmes must take their final examinations at accredited institutions, which can award degrees and diplomas.
- *Accreditation.* Accreditation applies to provisionally licensed programmes, which meet all the legal criteria and standards during the time for which the license has been issued. As soon as a university is accredited, it becomes autonomous and is entitled to award legally recognized diplomas and certificates in its own name.
- *Periodic Evaluation.* The Law provides that all universities (with all their faculties, colleges, and programmes) be subject to evaluation every five years.

The initial information is extracted from the self-evaluation reports, which provide information on the university as a whole, on the faculty (department or college), and on the programmes. The evaluation criteria employed in assessing the quality of educational programmes can be

of instruction; teaching staff; academic research; infrastructure; financial and management activities.

The self-evaluation reports used as the basis for evaluation include statistics regarding the above mentioned indicators for a period of seven to nine years. This period reflects the usual duration of studies (four to six years) plus three cohorts of graduates, which applies to the specialized study fields being submitted for evaluation, as well as to the faculties and universities to which the fields belong.

Since the vast majority of the self-evaluation reports are not submitted in electronic format, but rather as hard copy, the bulk of the statistics cannot be integrated into a single national system of indicators for higher education.

3.4. Financing

The system of higher education in Romania is financed by the Ministry of National Education, on the recommendations of the National Council for Higher Education Funding (NCHEF).

A new financial procedure, called Global Financing, was designed and implemented starting with the 1998-1999 academic year. According to this procedure, budgeted funds are allocated to higher education institutions on the basis of an institutional agreement.

Global Financing has two components: core financing, representing 80 percent of the entire budget for higher education, and complementary financing, representing 20 percent of the same budget. Higher education institutions receive their core financing based on a formula which considers the equivalent number of students, while the complementary component is allotted on the basis of competition.

The reform programme for higher education includes substantial changes in the field of financial management, ensuring academic autonomy. These changes can be summarized as follows:

- Institutions are autonomous and make their own decisions as to how to use the funds received, in accordance with their institutional development plans.
- They have complete financial autonomy regarding the creation and the management of their own resources.
- Institutions have the right to require that their subsidized students pay administrative fees.
- Public institutions are allowed to enroll tuition fee-paying students.

According to the Romanian Law on Education, 4 percent of GNP should be allocated, via the state budget, to the financing of education. Unfortunately, this provision has never been implemented. The percentage of GNP allocated to education has been considerably lower than that in other European countries. On the other hand, the low level of budgeted allocations for education, along with the low level of GNP, has caused the

public funds available for the financing of education to be much lower than in most European countries.

Public higher education may also be financed from non-governmental resources, both internal and external. Internal sources include services or activities, contributions by business organizations, and tuition fees. The mean value of the percentage of the individual income of universities (*i.e.*, generated from both internal and external sources) was 34.94 percent in 1999, with a variance of 56 percent for the pool of universities considered.

The essential indicator for the assessment, planning, and allocation of funds is the level of the unit cost per equivalent student. This indicator is one of the essential components of the package of measures required for the implementation of the reform, according to which financial resources should meet student needs.

The unit cost per equivalent student can be thought of as having two forms:

- the overall cost per equivalent student (expenses covered from core and complementary financing);
- the net cost per equivalent student (expenses covered only from core financing). The net unit cost is an indicator which estimates the required amount of core financing at the level of each university compared to the whole Romanian higher education system and the fair distribution among universities of the funds approved in the national budget.

The general equation for the establishment of a unit cost (be it overall or net) (Nica, 1999) is

$$C_{u/se}=C_T/N_{se},$$

where

$C_{u/se}$ = unit cost per equivalent student;

N_{se} = numbers of equivalent students;

C_T = total expenses.

The expression, number of equivalent students, is common to both indicators mentioned above. For it to be determined at the university level, two elements must necessarily be known: (*i*) the average number of participants in each of the forms of education existing in universities, and (*ii*) the equivalence coefficient corresponding to each form of education stipulated by the National Council for Higher Education Funding. The equivalence coefficients have been set by the National Council for Higher Education Funding based on the comparison of teaching hours spent in different forms of training. This indicator, computed at the level of each university and at the national level, enables several comparisons among

different universities and profiles of education. The number of equivalent students is the basic indicator to be considered in the elaboration of the annual draft budget, both at the level of each university and at the level of the Ministry of National Education.

The unit cost per equivalent student is influenced by numerous factors, among which the design and organization of teaching activities. The administrative system plays an essential role.

Each of the two factors can be measured on the basis of a number of indicators, as follows:

- indicators regarding teaching activities:
  - number of specialized study fields and the average number of students per study year;
  - number of teaching hours per week;
  - ratio of working hours in small groups to the total of practical work and workshop hours;
  - average number of students in a group;
  - extent to which teaching positions are filled;
  - ratio of the numbers of equivalent students to the number of teaching jobs.
- indicators regarding the administrative system:
  - numbers of maintenance staff;
  - teaching space in m^2 per student;
  - numbers of students per non-teaching job.

The value of each of these factors is directly determined by the specific characteristics of the educational process in different study fields (*e.g.*, engineering, humanistic sciences, medical sciences, etc.); moreover, their values can change over time.

For determining the unit cost per equivalent student, as well as the budget fund allocations to universities, a *cost coefficient* is used. This cost coefficient is calculated as the ratio between the unitary cost for different specialized fields and the unitary cost for the economic and social-humanistic field, which is considered as the basic line. This indicator is employed in determining other indicators, which measure both the financing process and the performance evaluation regarding the financial management at institutional level.

In conclusion, the following major problems can be identified:

- If the indicators refer to the measurement of certain aspects of the higher education system such as trends in the numbers of students, either globally or according to certain structural groupings (sex, study field, education, forms of education, etc.), the level of enrollment in higher education, or the numbers of students per 100,000 inhabitants, the physical numbers of students should be taken into account.

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- If the indicators refer to public as well as to private financing of higher education, based on such factors as expenses per student, expenses from public and private funds, etc., the use of the above indicator (*i.e.*, the physical number of students) is not appropriate, since it leads to improper comparisons and therefore could be irrelevant. The values of these indicators are strongly determined by the student distribution per study field. In this case, it is necessary to use indicators that take into account the number of equivalent students. However, such an indicator – or any other, which would allow a valid basis for comparison – has not been taken into account in the compilation of international statistics.
- In some countries, Romania included, only certain categories of students or specialized study fields have access to public funds. As a result, there will be significant differences across countries, which will affect the comparability of statistics coming from such countries. For instance, in Romania, only public universities have access to public funds for the financing of higher education. But even in the case of public universities, there is a distinction between *students* financed from the state budget and self-financed students (paying tuition fees). The public universities do not receive budgeted funds for the last category of students, who, for all practical purposes, have the same status as students in private universities. At the same time, certain forms of higher education (*e.g.*, distance learning) or postgraduate studies are funded only from private funds (*i.e.*, fully financed through tuition fees).
- To ensure the comparability of statistical data among different countries when determining such indicators as that of "public funding per student", the number of equivalent students must be taken into account and can only be calculated on the basis of the number of students who can actually be financed from such funds. Otherwise, the indicator itself slides into irrelevance.

4. PROSPECTS FOR THE UTILIZATION IN ROMANIA OF A SYSTEM OF PERFORMANCE EVALUATION INDICATORS FOR HIGHER EDUCATION AT INSTITUTIONAL LEVEL

At present, Romanian universities are undergoing a profound transformation so as to align themselves with international trends and standards in higher education. They are continuously improving in terms of meeting their academic objectives, while their activities continue to be shaped by social and economic realities. Autonomous decision-making, at academic and financial levels, allows them to adopt distinct management strategies, with objectives specific to each university. At the same time, experience makes a difference in terms of the degree to which universities undertake their major tasks, offering instruction and undertaking research of high quality.

Currently, various judgments regarding the level of performance of the educational process in universities are appearing from various sources, but the arguments that fail to be substantiated are often subjective. At the same time, the Law of Education specifies that

> core funding is budgeted by the State according to the number of undergraduates and PhD students attending tuition-free courses, lecture participants, level and nature of the theoretical and practical training. Other specific indicators related to educational activity, especially when referring to the quality of teaching, are also taken into consideration (Government of Romania, 1995, Art. 171, it. 3).

The indicators cited above, however, have not yet been formally specified. Consequently, the current funding of universities is non-differential: funding decisions disregard differences in the efficient use, by universities, of budgeted allocations.

In some European countries, specific comparative procedures have been implemented in order to assess university performance. They aim either at the separate assessment of teaching and research or at the assessment of both activities combined by means of a synthetic indicator.

Among the current procedures, and taking into consideration both the synthetic features of the assessment and the given experience, the author considers that the quality award-based assessment process represents a thorough assessment of the different aspects related to the performance of universities at institutional level.

Since 1999, the Romanian Ministry of National Education, supported by a PHARE grant, has been working on the design of a system of indicators for the performance evaluation of higher education at institutional level in Romania (Nica, 2000).

After an analysis of the concept of performance at institutional level, the following seven main dimensions were chosen:

i. Academic prestige;
ii. Selectivity by students and university attractiveness;
iii. Management of human resources;
iv. Scientific research, continuing education, and Master's and Doctoral Degrees;
v. Student and graduate performances;
vi. Financial resources and ability to provide needed teaching conditions;
vii. University strategic management.

Each of these dimensions (synthetic indicators) of the system of indicators consists of additional analytical indicators, each one having a specific method of calculation.

As far as some of the indicators are concerned, the data required in determining their value can be obtained from existing reports by the Ministry of Education (statistical reports on the teaching structures and the teaching staff, or the number of students, institutional agreements,

accounting audits, etc). For the rest of the indicators, the data can be obtained from the national councils mentioned above. Universities themselves can also supply the information needed to determine the value of those indicators for which no other sources of information are available.

Some indicators require the development of new activities that the universities have not undertaken or have only started to undertake. These include student services (*i.e.*, career development and assistance in job searches, adaptation of the curriculum to market-required skills, the development of quality management systems, etc.).

As those universities featuring a complex configuration would educate students in two or more fundamental fields, the global value of a university indicator pertaining to them should be calculated as a composite indicator by factoring in the weight of each fundamental field according to the structure of the mass of students. The process of evaluation could therefore apply to similar universities and faculties, and respectively, to students belonging to similar fields. By the same token, an evaluation of different faculties belonging to the same university might also be undertaken: hence, the difference between those faculties helping to push the respective university to a top position and those diminishing its qualitative level might be ascertained.

5. CONCLUSIONS REGARDING THE DESIGN OF THE UNESCO SYSTEM-LEVEL INDICATORS FOR HIGHER EDUCATION

Based on the Abercromby and Fielden (2000) study, several changes are suggested.

Considering the vision of higher education as formulated in *Higher Education in the Twenty-First Century....* (UNESCO, 1998a) and the *Framework for Priority Action....* (UNESCO, 1998b), the basic proposals regarding adjustments in the system of indicators refer to the following factors:

- the organization of indicators in a tree structure which would permit their grouping into categories defining distinct aspects of higher education at the national or institutional level;
- the regrouping of certain indicators and groups of indicators on the basis of their belonging to specific aspects of the educational process, thus ensuring a stricter definition of these indicators;
- the addition of certain indicators able to define important aspects of the educational process at national and institutional levels;
- the inclusion of certain indicators that could serve as the basis for the comparative analysis of institutional performance at the national, regional, and international levels;
- the regrouping of all indicators regarding the effects of actions by UNESCO and other international organizations and institutions in a separate chapter so as to ensure a coherent and complete vision of these actions and effects.

We propose the following structure for the UNESCO System-Level Indicators for Higher Education:

1. Promotion of access on merit
   1.1. Social – equal opportunity and access to higher education
   1.2. Cultural – seamless and open access to higher education
2. Modernization of systems
   2.1. Technological access
   2.2. The contributions of government, local communities, employers, and other institutions, at the national and local level, to higher education
   2.3. Mobility trends
3. Institutional effectiveness
   3.1. Institutional quality, accountability, and international standing
   3.2. Scientific and intellectual integrity and ethics in higher education
   3.3. Staff development, participation, and human resources management
   3.4. Strategic management, a quality management system, and policy preparation
   3.5. Curricular and course relevance
   3.6. Research links and performance
   3.7. International co-operation activities
4. Society and work
   4.1. Lifelong source of professional training
   4.2. Development of entrepreneurial skills
5. The contribution of UNESCO and other international organizations to promoting higher education in the context of globalization.

In addition, the data led to the following set of proposed changes:

- the need to use complementary methods to display information, using tables as well as charts, so that information is conveyed in a suggestive form for users;
- the need to use a standard monetary denomination for the financial indicators, instead of national denominations, to ensure data comparability;
- the need to use time series to illustrate the degree and direction of changes. For instance:
  - monitoring the trends of a given phenomenon in one country, in comparison with the trends in a group of countries, which are comparable from the point of view of development level or are located within the same geographic area;
  - monitoring the trends of a given phenomenon in comparison with the trends of another phenomenon, which is related in some way with the first (*e.g.*, expenditure per student in higher education as compared to expenditure per student in other forms of education, or compared to the GNP per capita, etc);

- the need to make UNESCO statistics available in a form accessible to most users so as to enable further analysis of the data with a minimum investment of time and the least possible error. We strongly recommend that the data be maintained on Microsoft Excel spreadsheets and be made available on the Internet for easy and universal access;
- the design of the presentation layout for the system of indicators in a Web format, with hyperlinks from each of the indicators to corresponding definitions, databases, and charts.

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X. A South African Perspective on System-Level Indicators for Higher Education

SALEEM BADAT

1. INTRODUCTION

The aim of the 1998 UNESCO World Conference on higher education was "to lay down the fundamental principles for the in-depth reform of higher education systems throughout the world with a view to strengthening their contribution to the building of peace, founded on a process of development based on equity, justice, solidarity, and liberty". To this effect, the Conference issued two documents: *Higher Education in the Twenty-First Century: Vision and Action*, and *Framework for Priority Action for Change and Development of Higher Education* (UNESCO, 1998a; UNESCO, 1998b). The documents indicate the goals and objectives to be pursued by higher education and the actions to be taken in this respect.

An important issue is how it will be possible to know whether or not countries are indeed making progress towards the achievement of the goals and objectives that have been defined and whether actions are being taken towards their realization. The Invitational Roundtable on System-Level Statistical Indicators for Higher/Tertiary Education, that was jointly organized by the Research Institute for Higher Education of Hiroshima University and UNESCO-CEPES, sought to address this precise issue.

To facilitate discussion during the Roundtable, a concept paper, "System-Level Indicators for Higher/Tertiary Education: Some Notes on Requirements and Use" was circulated (see Kaiser, 2003, in this volume, pp. 31-35) . The paper served as a useful entry point into the theme of system-level indicators. However, given its purpose, it also gave rise to a number of questions that must be addressed if countries are indeed going to be in a position to produce the system-level indicators that are being sought.

The concern of this article is principally the conceptual, strategic, and empirical issues that will need to be confronted. However, it also addresses the past and present situations with respect to system-level indicators in South Africa and the likely future and accompanying issues and problems so far as system-level indicators are concerned against a backdrop of the structure, purposes, and policy goals of South African higher education.

2. THE SOUTH AFRICAN HIGHER EDUCATION SYSTEM

The 1996 Constitution of the Republic of South Africa defines higher education as a national government competency, as opposed to a provincial competency. As a result, higher education provision falls under the jurisdiction of the national Ministry of Education. The Higher Education Act

of 1997 provides the legislative basis and framework for South African higher education.

The higher education sector comprises public institutions – universities, technikons (a kind of South African technical college), colleges of education, and agricultural and nursing colleges – as well as numerous, generally small, private institutions providing higher education. A programme-based definition of higher education rather than a purely institutional definition means that higher education programmes may also be offered by further education institutions. The *White Paper* of 1997 states that the colleges will be incorporated into the higher education sector in phases, beginning with the colleges of education.

There are twenty-one public universities and fifteen public technikons, the student enrollments of which, during 2000, were 386,000 and 199,000, respectively. During the pre-1994 apartheid period, there were 120 colleges of education. Their numbers have been gradually reduced and, during 2001, all education colleges were incorporated into universities and technikons. There are also twenty-four nursing colleges (6,647 students enrolled in 2000) and eleven agricultural colleges (2,033 students enrolled in 1999), which presently exist under provincial rather than national jurisdiction.

Alongside the public higher education sector, there exists a small but growing private higher education sector. The 1996 *Constitution* provides for such institutions on condition that they do not discriminate on the grounds of race, and that they register with the state and maintain standards that are not inferior to those at comparable public institutions. The *Higher Education Act* stipulates the legal conditions for the registration of private higher education institutions and imposes various obligations. A regulatory framework is emerging to ensure that only those private institutions with the necessary infrastructure and resources to provide and sustain quality higher education will be registered.

There is a diverse range of key national actors in higher education and higher education policy-making. The national Ministry and Department of Education regulate higher education provision and attempt to steer higher education to contribute to national policy goals through the instruments of national planning and public funding. The Council on Higher Education serves as the advisory body to the Minister of Education and is also responsible for quality assurance (programme accreditation, programme reviews, institutional audits, and quality promotion). Umbrella interest groups such as the South African University Vice-Chancellors' Association, the Committee of Technikon Principals, the Association of Principals of Agricultural Colleges, and the Alliance of Private Providers of Education, Training, and Development exist alongside numerous national student organizations, labour unions, and research and development agencies.

As characteristic of periods of social transition, South African higher education is in considerable flux. As with other areas of South African society, a comprehensive agenda for transforming higher education has

been developed. This agenda has its source in at least three related conditions.

First, the inherited higher education system was designed, in the main, to reproduce, through teaching and research, white privilege and black subordination in all spheres of society, and all institutions were, in varying ways and to varying extents, deeply implicated in this purpose. A lack of vision, a paralysis of policy, and a lack of legitimacy and conflict around governance characterized higher education. It was fragmented and divided along racial and ethnic lines, and reflected severe social inequalities of race and sex, with respect to student access and success and the composition of the academic staff. Finally, there were major institutional inequities between what has been termed historically white institutions and historically black institutions. Thus, one key policy imperative and challenge is to transform higher education so that it becomes more socially equitable internally and promotes social equity more generally.

Second, research and teaching were extensively shaped by the socio-economic and political priorities of the apartheid separate development programme. Instead, higher education is now called upon to address and to become responsive to the development needs of a democratic South Africa. These needs are crystallized in the *White Paper on the Reconstruction and Development Programme* (RDP) (Government of the Republic of South Africa, 1994, as a fourfold commitment. First is "meeting basic needs of people – jobs, land, housing, water, electricity, telecommunications, transport, a clean and healthy environment, nutrition, health care, and social welfare". Second is "developing our human resources", defined as crucial to the RDP as a "people-centered programme".

Third comes "building the economy", and finally, the task of "democratizing the state and society", on the grounds that "without thoroughgoing democratization, the resources and potential of our country and people will not be available for a coherent programme of reconstruction and development".

Finally, the transition of South Africa occurs during a period that has witnessed the emergence of a global economy and changes in the world that have been captured by the "globalization" concept. It is recognized that economic growth, in the words of Martin Carnoy, is "increasingly dependent on knowledge and information applied to production, and this knowledge is increasingly science-based" (Carnoy, 1998, p. 2). Moreover, if the argument of Manuel Castells that "if knowledge is the electricity of the new informational international economy, then institutions of higher education are the power sources on which a new development process must rely" (cited, *in*, National Commission on Higher Education, 1996) enjoys broad acceptance (see Manuel Castells' biography at http://www.sociology.berkeley.edu/faculty/castells), a concomitant challenge facing higher education is to produce, through research and teaching and learning programmes, the knowledge and people-power that will enable South Africa

to engage proactively with and to participate in a highly competitive global economy.

Higher education policy development – from the National Commission on Higher Education of 1996, through to the *Higher Education Act* of 1997 and the 1997 *White Paper, A Programme for the Transformation of Higher Education in South Africa* – has taken as its point of departure the triple challenge indicated above. This challenge is to overcome social-structural inequities, to contribute to reconstruction and development, and to position South Africa to engage effectively with globalization. The gravity, the enormity of the challenge, becomes more evident when one understands that for economic, social, and political reasons, there is no option to postpone one or other elements of the challenge or to tackle them in sequence. Rather, they must be confronted simultaneously.

As the White Paper notes:

> [T]he South African economy is confronted with the formidable challenge of integrating itself into the competitive arena of international production and finance....
> *Simultaneously*, the nation is confronted with the challenge of reconstructing domestic social and economic relations to eradicate and redress the inequitable patterns of ownership, wealth, and social and economic practices that were shaped by segregation and apartheid (emphasis added).

In relation to this many-headed challenge, the White Paper identifies various and, indeed, diverse social purposes for South African higher education:

> ...attention to the pressing local, regional, and national needs of South African society and to the problems and challenges of the broader African context.
> ...the mobilization of human talent and potential through lifelong learning to contribute to the social, economic, cultural, and intellectual life of a rapidly changing society.
> ...to help lay the foundations of a critical civil society, with a culture of public debate and tolerance which accommodates differences and competing interests.
> ...the training and provision of people-power to strengthen this country's enterprises, services, and infrastructure. This [task] requires the development of professionals and knowledge workers with globally equivalent skills, but who are socially responsible and conscious of their roles in contributing to the national development effort and to social transformation.
> Production, acquisition, and application of new knowledge: ...a well-organized, vibrant research and development system which integrates the research and training capacity of higher education with the needs of industry and of social reconstruction.

In terms of specific policy goals and initiatives, the higher education transformation agenda is constituted by:

- the development of a single, integrated, national, co-ordinated, yet differentiated, and diverse higher education system;
- co-operative governance of the system and institutions and partnerships;
- increased and broadened participation within higher education to meet people-power needs and to advance social equity;
- curricular restructuring and knowledge production which is responsive to societal interests and needs;
- quality assurance through assessment and promotion of quality and accreditation of programmes;
- incorporation of higher education programmes and qualifications within a National Qualifications Framework, designed to promote articulation, mobility, and transferability;
- improved institutional planning and management and the development of three-year institutional plans;
- state funding on the basis of allocated student enrollments and accredited programmes with redress funding to overcome historical institutional inequities.

In analyzing the transformation agenda in South Africa, including within higher education, it can be conceived of as being riveted with paradoxes. If a paradox is understood as entailing an idea constituted by opposing propositions that, however contradictory they may be, are for good political and social reasons, equally essential for effective pursuit of the transformation agenda, creatively addressing the paradoxes is crucial to the effective functioning of higher education.

A number of goals and/or strategies related to goals stand in a relationship of intractable tension and establish difficult political and social dilemmas and choices and decisions. The challenge is to find policies and strategies which, in the context of existing conditions, can satisfy multiple imperatives and can *balance* and enable the pursuit of equally desirable goals. This task represents a major and taxing challenge.

For example: given the policy goals and challenges of both global competitiveness and redistributive reconstruction and development, a crucial question is posed for higher education. How does it orient itself towards both these imperatives? How are the varying needs of both these two poles to be satisfied simultaneously? More specifically, what does this challenge mean for individual higher education institutions or for groupings of higher education institutions – the historically advantaged and disadvantaged universities and technikons? Are all higher education institutions to be oriented towards both poles or is there to be a functional differentiation with respect to the two poles? Are these to be choices that are to be left to higher education institutions themselves or is the State to actively steer in this regard?

Notwithstanding the challenges, the existence of a vision and clearly defined purposes and explicit and concrete policy goals and objectives for higher education is a major strength of the South African transformation agenda. Further, since the formulation of explicit goals and objectives is a necessary condition for constructing strategic indicators, their existence facilitates the construction of system-level strategic indicators.

3. SYSTEM-LEVEL INDICATORS FOR HIGHER EDUCATION: PAST, PRESENT, AND FUTURE

3.1. The Past

The previous system of higher education was driven by apartheid ideology and characterized by fragmentation along racial and ethnic lines. The role of the State was a mixture of political interference in some institutions (largely those historically black) and yet also the provision of a high level of autonomy for others (those historically white) institutions. Overall, there was little rationality and coherence in the system, an absence of overall national planning, and limited strategic institutional planning. No attention was given by government and higher education institutions to formulating a clear and participatory vision for the system and to defining the purposes and goals of higher education and the particular missions of individual institutions.

In the mid-1980s, the national Department of Education introduced an information system known as the South African Post-Secondary Education (SAPSE). Each higher education institution was required to submit information annually related to:

- qualifications, fields, and levels of study;
- students - headcount and full-time equivalents (FTEs) by race, sex, levels and fields of study, geographic origin, institutional origin, courses passed, diplomas/degrees earned, etc.;
- staff – headcount and FTEs by race, sex, age, rank, qualification, and contact hours spent on teaching, research, and administration;
- finances;
- fixed assets;
- buildings and space – lecture halls, laboratories, etc.

This information was considered necessary for "effective administration, planning, and policy formulation". However, in the absence of clear, explicit policy goals and of a strong notion of public accountability, effectiveness was largely a technical matter, rather than related to the achievement of widely agreed upon national goals. In this context, there was, not surprisingly, no discourse about measuring and monitoring the performance of the higher education system and institutions, and there was no explicit reference to performance indicators or strategic indicators.

3.2. The Present and Future

Since 1997, a new legislative and policy framework has emerged with an explicit vision for higher education and an explicit definition of its social purposes and of policy goals and objectives. Concomitantly, three mechanisms have been identified as key instruments for achieving policy goals and objectives.

The first is iterative national and institutional planning processes, which have resulted in five-year institutional plans around teaching and research, three-year institutional "rolling plans", and a *National Plan for Higher Education* (MoE, 2001). The second mechanism is a new framework for the funding of higher education, one which is very goal-directed (DoE, 2001). Finally, there is a new national quality assurance system centered around the compulsory accreditation of higher education learning programmes, programme reviews, and intermittent audits of institutions (HEQC, 2001). At the same time, there has been a convergence with international trends for greater public accountability, on the part of higher education institutions, for the expenditure of public funds and around their performance – the scrutiny of the efficiency, effectiveness, quality, responsiveness, and good governance of institutions.

Thus, a discourse of measuring, monitoring, and evaluating the performance of higher education system/institutions has been emerging with explicit references to strategic and performance indicators.

Within South African higher education there was an initiative to replace SAPSE, as of 2000, by a new Higher Education Management Information System (HEMIS). This system was developed and is managed by the national Department of Education, but with close attention paid to the easy incorporation of information generated by the quality assurance activities of the Council on Higher Education.

HEMIS is intended to:

- devote specific attention to data collection for measuring the performance of the system and institutions around key policy goals and objectives;
- require each institution to submit information annually (even though this requirement is being limited with respect to certain data);
- begin with the collection of student and staff statistical information ;
- overcome the complexity and limitations of SAPSE;
- continue to make use of SAPSE in other areas – for example, for the construction of performance indicators that can draw on information generated through the present SAPSE.

4. SYSTEM-LEVEL INDICATORS: ISSUES AND PROBLEMS

The identification of appropriate performance and strategic indicators is made easier by the clear identification of policy goals and objectives. However, national and institutional strategic planning is still an emerging

culture. The importance of performance and strategic indicators in this regard should not be considered as self-evident, but must be continuously emphasized and demonstrated.

The availability and use of strategic indicators depends, of course, on effective, efficient information systems. Despite some progress, the present higher education information systems continue to be sorely inadequate, especially in relation to information regarding financial matters. Moreover, many institutions lack the effective capacity to provide and to process data and information and have a very limited culture of reflective institutional research. Building a much more responsive and modern information system that provides policy-relevant real-time data on students and staff, both in the public and private higher education areas, is an urgent challenge.

It will be necessary for the national Department of Education to develop the operating systems and capacity at national level, to also provide the overall framework for systems at institutional levels, and to help develop the operating systems and human capacity at institutional levels. Ultimately, the co-operation of institutions in consistently submitting information that is accurate and timely is vital and must be secured. There is little reliable information presently on the operations and functioning of the private higher education sector, an issue that has to be addressed.

The fields of policy monitoring and evaluation and strategic planning, within which performance and strategic indicators are embedded, are relatively new in South Africa. The capacities and expertise to generate indicators, to collect and to process information and data, and to analyze and interpret the indicators need to be developed at system and institutional levels.

Finally, co-ordination and co-operation among different agencies and a confluence of activities related to information systems and the gathering of pertinent data will be imperative. The agencies in South Africa that are immediately linked to education and training include the national Department of Education, the Council on Higher Education, and the South African Qualifications Authority, which is responsible for the implementation of the National Qualifications Framework. Other agencies include government departments such as Labour (which is involved in high-level skill development at national level), Health (which regulates the nursing colleges), and Home Affairs (which issues visas for foreign students and staff).

5. THE UNESCO PROJECT: CRITICAL ISSUES

A commitment to the UNESCO *World Declaration* goals clearly necessitates a joint effort by countries to develop strategic indicators to measure progress and the achievement of higher education objectives. At the same time, it is important to address a number of issues of a *conceptual*, *strategic*, and *empirical* nature.

To begin with conceptual issues, a number of crucial questions need to be addressed. First, it is important to achieve clarity around key concepts

such as "indicator", "performance indicator", and "strategic indicator" – both regarding what is distinct about each concept and also regarding the relations, if any, among them. Second, it is necessary to clarify the relationship between indicators and what is simply information/statistics, and between indicators and information systems. Third, the relation between "system-level" and "institution-level" indicators needs to be clarified? Are, for example, institution-level indicators the pre-condition for system-level indicators? Or are they not necessarily so tightly coupled, but just one input into system-level indicators? Fourth, what is the relationship between indicators and values and choices regarding the purposes, goals, and objectives of higher education? Fifth, are indicators inextricably linked to policy intentions and intended outcomes? Can there be indicators for capturing the unintended outcomes of policies? Sixth, is the focus to be on outcomes or structures, or mechanisms/instruments or processes, some of these, or all of these? Finally, there is the enormous challenge of making judgments on issues such as the character of "institutional culture", the "quality of learning-teaching", the "relevance" of institutions and programmes, student and staff "participation in governance", and so forth.

Turning to the *strategic* issues, one important task is to convince countries and important stakeholders of the importance and value of strategic indicators. If countries and institutions are not persuaded of the vital role that strategic indicators can play in developing more effective quality and efficient higher education provision, the necessary financial and human resources are not likely to be devoted to this activity. Another important task will be to ensure that countries do not experience the activity of generating system level strategic indicators as an external imposition, but have a genuine sense of ownership of the developments of processes and systems. Here, it is necessary to be sensitive to the highly uneven contexts of developed and developing countries and within developing countries with respect to higher education information systems. This understanding must influence choices as to how comprehensive or selective a range of strategic indicators is necessary, as well as the human and financial resources that are available to specific countries. Capacity development at institutional and individual levels may be a necessary condition for certain countries to be in a position to generate and provide UNESCO with the necessary strategic indicators.

Finally, with regard to the *empirical* issues related to a project of developing strategic indicators, it is sufficient to highlight just two issues. First, it will be necessary to define clearly and explicitly what will be the products, outcomes, and processes related to the project. Second, it will also be essential to specify the time frames and timelines for the different phases of the project and the overall project. This task has a major bearing on many of the *strategic* issues that have already been raised.

6. CONCLUSION

There is a high degree of congruence between the policy goals and actions that have been defined for South African higher education and those that are identified in the UNESCO documents emanating from the 1998 World Conference. For South Africa, with good progress around the new Higher Education Management Information System, producing the range of strategic indicators that may be agreed upon by UNESCO should be a relatively straightforward exercise which will not require any major additional resources. Indeed it could enrich its own efforts and even give impetus to its own commitment to generating strategic indicators for monitoring and enhancing the equity, quality, and the efficiency and effectiveness of its higher education system.

However, as noted, it is necessary for UNESCO and its Member States to deal with a number of important issues, to arrive at workable solutions, and to communicate these effectively to countries. These issues are simultaneously conceptual, strategic, and empirical in nature, and their resolution will have a strong bearing on the success of any UNESCO initiative around system-level strategic indicators.

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XI. Key Issues in the Development of Higher/Tertiary Education in China

HONG-WEI MENG

1. INTRODUCTION

The remarkably high and sustained levels of economic growth in China are placing increasingly heavy demands on the skills and knowledge of its population, particularly of its senior scientists, technicians, and administrators. This situation has raised the need for the fundamental renewal and re-orientation of higher education at system and institutional levels in order [for it] to adjust to the demands of social-economic development. More importantly, a strategic shift has occurred in Chinese higher education from an élite-oriented to a public-oriented system.

The *Educational Statistics Yearbook of China* (1990-1999) has proven to be a valid and valuable data collection organ for the monitoring and the evaluation of development and progress in higher/tertiary education, as well as in the whole education system. In order to be able to reinforce policy and decision-making, the annual data collection system should be further strengthened so as to be able to reflect key policy-relevant issues, and more particularly, to undertake factual reporting.

This study will present a brief description of the higher/tertiary education system in China based on ISCED 1997 and highlight some key issues in its development. It may form the basis for further discussions on the development of relevant international comparative indicators.

2. THE CURRENT STATUS OF THE HIGHER/TERTIARY EDUCATION SYSTEM IN CHINA

Table 1. Categories of tertiary education in China (based on ISCED 1997)

Theoretical duration	Level 5 - First stage of tertiary education (not leading directly to an advanced research qualification)					Level 6 – Second stage of tertiary education (advanced research qualification)
	5 B		5 A			
	First qualification	Second qualification	First degree	Second degree	Research degree	
2 and less than 3 years	Diploma					
3 and less than 4 years	Diploma					
4 and less than 5 years		Diploma	Bachelor's			
5 and less than 6 years		Diploma	Bachelor's	Bachelor's		
6 to 7 years				Research Programme	Master's Degree	
Over 7 years						Doctoral Degree

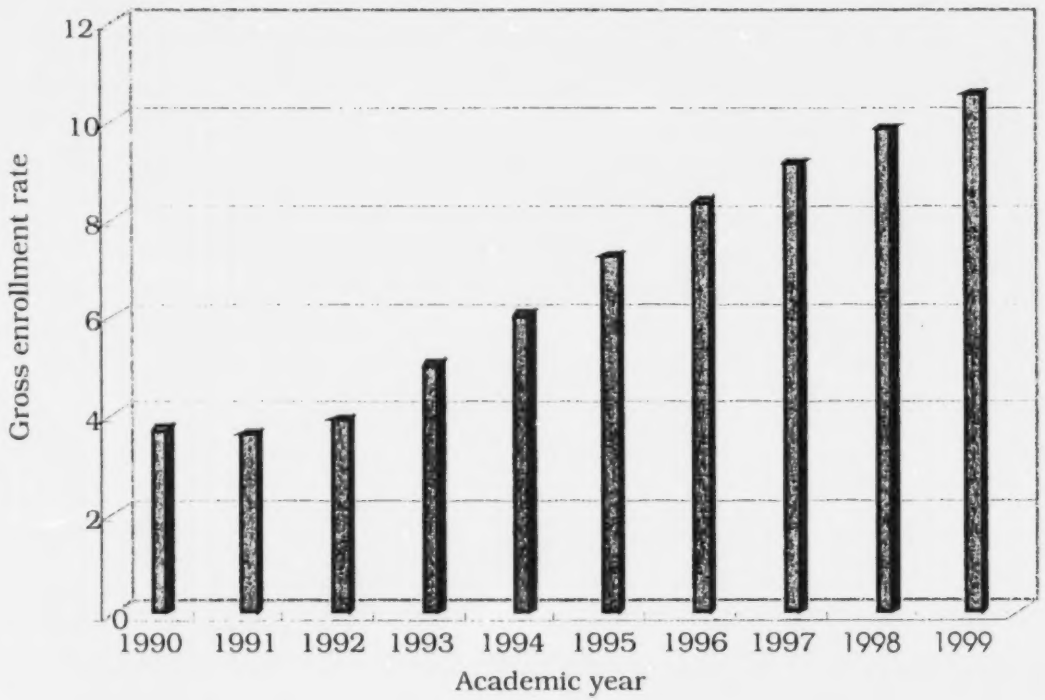
Source: The author.

3. THE ISSUES OF HIGHER/TERTIARY EDUCATION

Higher/tertiary education in China developed rapidly in the last decade of the Twentieth Century, but it is still relatively less developed than the average level of the lower middle-income countries around the world, in terms of gross enrollment rate.

The gross enrollment rate is one of the key indicators for the development of higher/tertiary education in a country. In terms of this rate, higher/tertiary education in China expanded from 3.7 percent in 1990 to 10.5 percent in 1999 and 11 percent in 2000. Figure 1 (below) illustrates the growth of the gross enrollment rate in higher/tertiary education in China from 1990 to 1999.

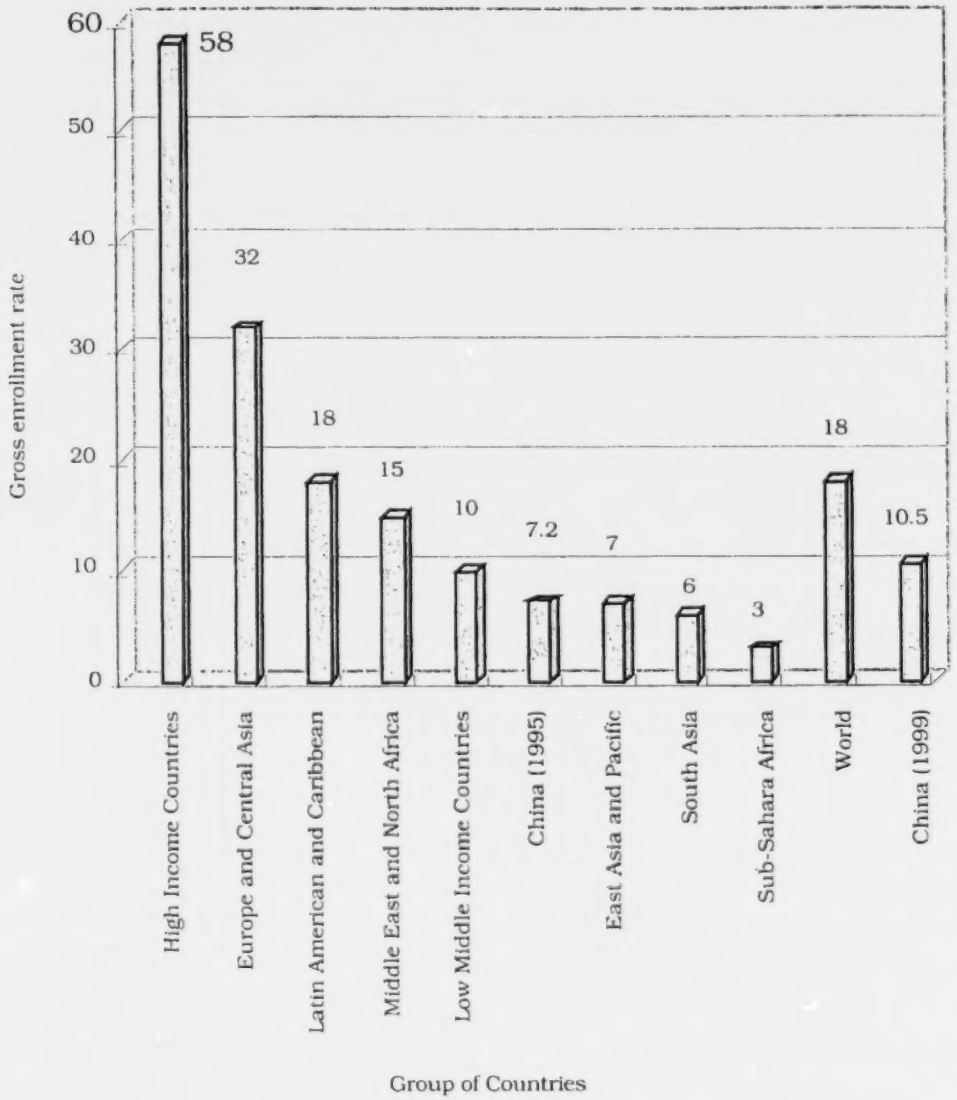
Figure 1. The growth of the gross enrollment rate of higher/tertiary education in China in the 1990s



Source: Ministry of Education, People's Republic of China (1990-1999).

According to the World Bank Report, *Higher Education in Developing Countries* (World Bank, 2000), the gross enrollment rate of higher/tertiary education in China in 1999 is at average level for low- and middle-income countries around the world. Figure 2 shows the comparison of the gross enrollment rate of the higher/tertiary education in China, in 1999, with low- and middle-income countries, high-income countries, and the average world level.

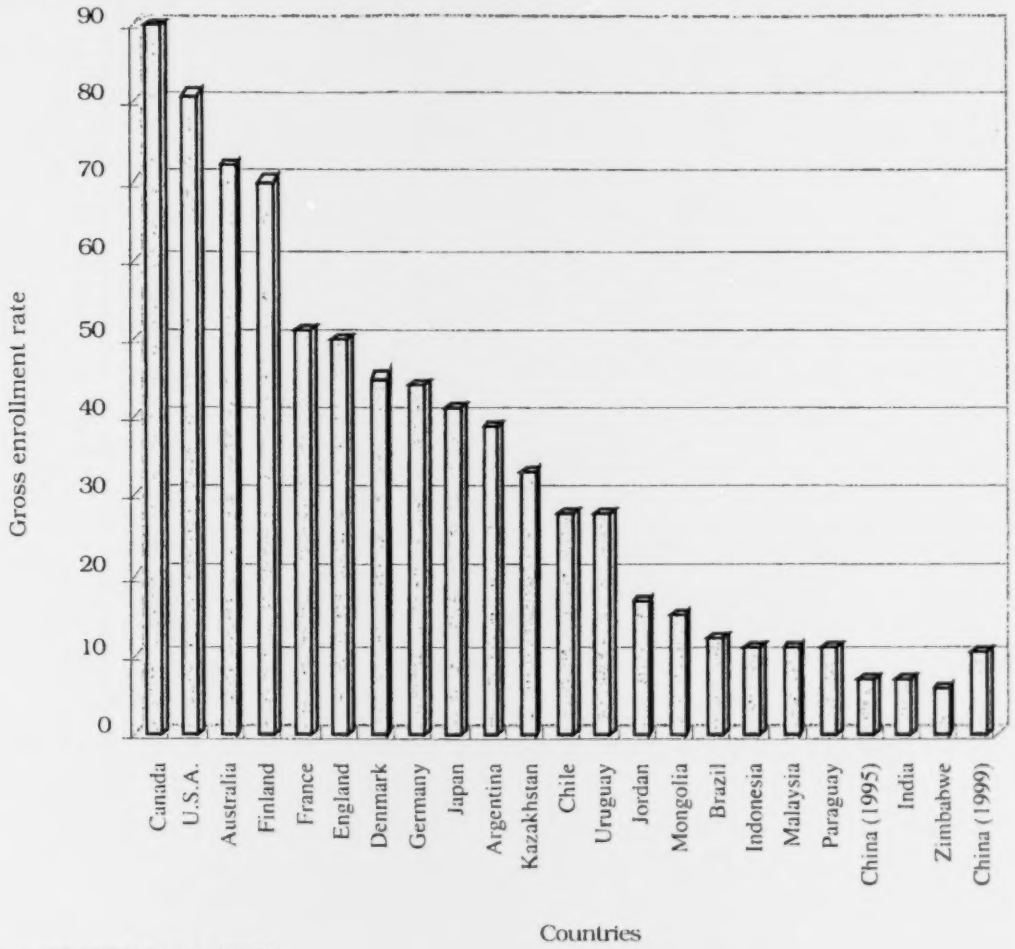
Figure 2. International comparison of the gross enrollment rate for tertiary education



Source: The World Bank (2000).

Figure 3 presents a comparison of the gross enrollment rate for higher/tertiary education in China with that of certain developed and developing countries. It again illustrates the reality that the gross enrollment rate the higher/tertiary education in China is relatively low. The results have had a significant impact on policy makers. An important decision taken by the Chinese government in 1999 was "to expand the [numbers of] new entrants into higher/tertiary education" with a view to raising the educational level of the population and to implementing a strategy to rejuvenate the country through science and education.

Figure 3. Comparisons of the gross enrollment rate into tertiary education of selected countries



Source: The World Bank (2000).

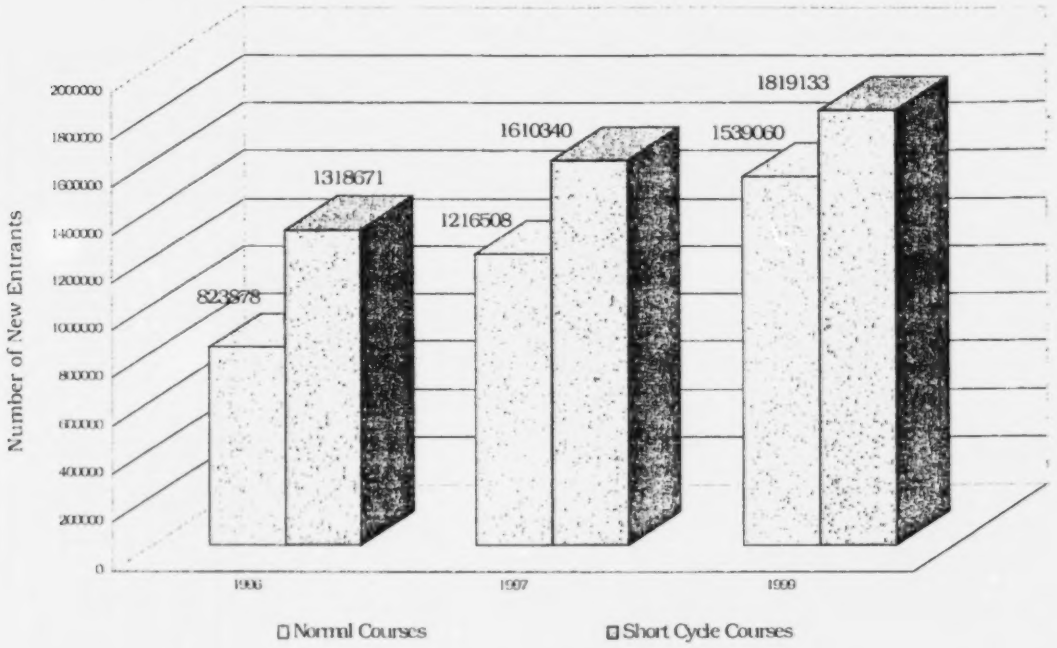
In 1999, the "Decision of the CPC Central Committee and the State Council on the Development of Educational Reform and the Promotion of Quality-Oriented Education in an All-Around Way" and the "Action Scheme for Invigorating Education towards the Twenty-First Century" of the Ministry of Education were formulated. These documents set the goals and the orientation for the development of all types of education, at all levels, and for macro-structural readjustments through 2010.

Figure 4 illustrates the rise in the numbers of new entrants into tertiary education during 1996-1999.

To increase the opportunities for higher/tertiary education for young people and all citizens will be one of the major targets of national educational development over the decade. The national goal is to achieve a 15 percent gross enrollment rate in higher/tertiary education by 2010.

The Government is tapping new resources and increasing the offerings for higher/tertiary education.

Figure 4. The increase in the numbers of new entrants into tertiary education in China during 1996–1999



Source: Ministry of Education, People's Republic of China (1996-1999).

In order to achieve this goal, the government will encourage and support all sectors of society to run schools in various forms so as to meet the increasingly popular demand for education and to create a pattern whereby the government assumes the main responsibility for running schools, with public and private schools developing side by side. The government has also suggested that the State accelerate legislation regarding private education and promote its sound development. This policy decision made is very important. It has a direct bearing on the development of higher/tertiary education and the overall situation of education in the country.

Table 2 presents the numbers of private higher/tertiary education institutions. The numbers of students enrolled in these institutions increased significantly from 1986 to 1999.

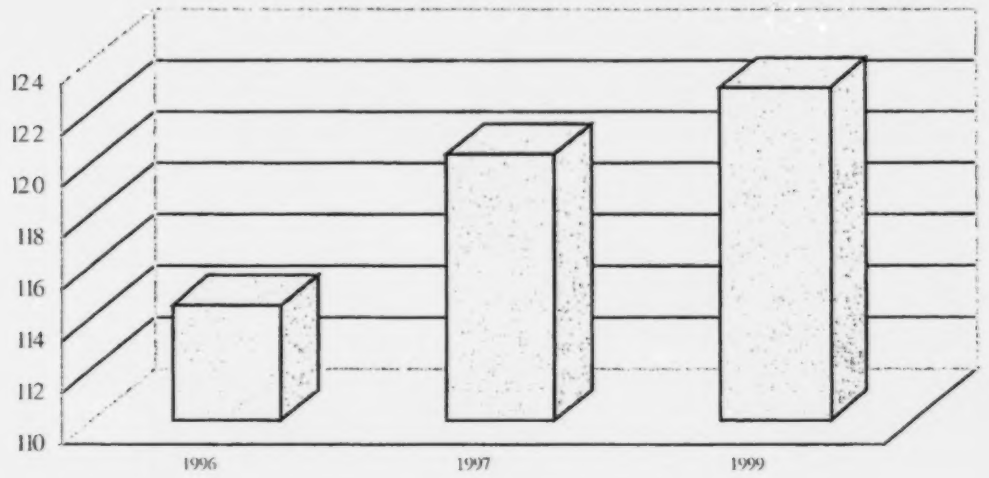
Table 2. The increase in the numbers of private higher/tertiary education institutions in China

	1,986	1,991	1,994	1,995	1,996	1,997	1,999
Numbers of private higher/tertiary education institutions	370	450	880	1,209	1,219	1,115	1,277
Numbers of students enrolled (10,000)	None				114.5	120.4	123

Source: The author.

In 1999, thirty-seven private institutions were approved by the Ministry and qualified to award higher education certificates. These certificates are recognized by the State. Most of the schools offer two or three years of professional training or vocational and technical education. Only one of them offers four years of education.

Figure 5. Increased enrollments in private higher/tertiary education institutions



Source: National Center for Education Development Research (2000).

The second category is composed of the pilot schools set up with a view to preparing students for the higher education certificate examination. The students enrolled in such schools can obtain a state-recognized higher education certificate after passing the specially designed unified higher education certificate examination.

The schools in the third category do not lead to state-recognized certificates. Most of them are guidance institutions for assisting self-learning students in passing examinations. These institutions give on-site instruction, offer correspondence courses, and help students participate in the yearly independent-study higher education examination.

Table 3 indicates the varied categories of private higher/tertiary education institutions.

Table 3. Private higher/tertiary education institutions, in China (in whole numbers).

	Institutions	Students	Institutions	Students	Institutions	Students
	1996		1997		1999	
1. Qualified to issue certificates	21	1.4	20	1.4	37	4.6
2. Experiments with examinations	89	5.1	157	9.4	370	25.8
3. Others	1109	108	938	109.6	870	92.6

Source: The author.

Private higher/tertiary education in China meets market demands, offers distinctive features, and seeks to exist and to develop. It is gradually becoming an important part of the developing Chinese higher/tertiary education sector.

Recently, the jointly run Chinese and foreign higher/tertiary institutions have attracted many Chinese students who intend to study abroad. These institutions have been legally established and may award certificates. This innovation has produced notable results in various areas.

4. RESPONSES TO SOCIAL DEMAND

It is obvious that the development of higher/tertiary education is closely linked to the demands of socio-economic development. The information age is having its effect upon the social and economic structure of China. The rapid development of the information and communication technologies is making heavy demands on the human resources in the field. Whether or not higher education can offer a timely response to social demand will interest policy makers. The analysis of the most popular study fields in universities and colleges, in the last five years, offers assurance that the higher/tertiary education institutions of China have the ability to satisfy social demand.

Table 4. List of the twenty most popular study fields in 1999.

Rank	Field of study	New entrants	Total new entrants (percent)
01	Computer Science and Technology	110,334	7.12
02	Chinese Language and Literature	72,251	4.67
03	Machines and Automation	71,453	4.61
04	English Language and Literature	69,068	4.46
05	Clinical Medicine	58,460	3.78
06	Business Management	57,134	3.69
07	Accounting	54,850	3.54
08	Mathematics and Applied Mathematics	47,834	3.09
09	Law	42,982	2.78
10	Information Engineering	37,820	2.44
11	Electrical Engineering and Automation	35,296	2.28
12	Electronics Science and Technology	34,758	2.24
13	Economics	33,059	2.13
14	Automation	30,193	1.95
15	Architecture	27,231	1.76
16	Physics	26,110	1.69
17	Physical Education	24,304	1.57
18	Chemistry	23,811	1.54
19	Marketing	23,412	1.51
20	Civil Engineering	22,906	1.48

Source: The author. With the numbers of new entrants enrolled in higher/tertiary education across China in mind, Table 4 lists the first twenty most popular study fields in 1999.

The results show that:

- Among the twenty most popular study fields, "Computer Science and Technology" is the most significant one, as the numbers of new entrants in it were the highest for new entrants in 1999.
- Four of the twenty most popular study fields are related to computer and information technology. The total numbers of new entrants in these study fields amounted to 13.77 percent of the total numbers of new entrants across the country.

Table 5 indicates the study fields having enrolled the greatest numbers of students over the 1995-1999 period.

Table 5. Most popular study fields in Chinese higher/tertiary higher education: 1995-1999

Rank	Study field	New entrants (in whole numbers)
01	Computer Science and Technology	326,941
02	Machines and Automation	279,017
03	Chinese Language and Literature	267,133
04	English Language and Literature	242,018
05	Accounting	222,898
06	Clinical Medicine	22,2230
07	Business Management	201,335
08	Mathematics and Applied Mathematics	181,610
09	Law	138,175
10	Economics	124,814
11	Electrical Engineering and Automation	119,455
12	Information Engineering	116,715
13	Automation	110,127
14	Physics	106,942
15	Civil Engineering	105,919
16	Physical Education	98,930
17	Chemistry	98,573
18	Chemical Engineering and Technology	96,656
19	Electronics Science and Technologies	89,101
20	International Trade and Economics	83,630

Source: The author.

5. STRENGTHENING THE POSITION OF HIGHER/TERTIARY EDUCATION IN THE NATIONAL KNOWLEDGE INNOVATION SYSTEM

In 1998, the Chinese government began to elaborate a national knowledge innovation system and supported the establishment of top class universities and study fields by means of which China might catch up with the most advanced nations of the world.

The Ministry of Education initiated its "Project on Senior Innovative Personnel in Higher/Tertiary Education Institutions" and "Project on High-Tec Industrialization Aided by Higher/Tertiary Education Institutions". The projects have been designed to encourage higher/tertiary education institutions to focus on key practical problems arising in national economic and social development, to take full advantage of innovative thinking and

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personnel, and to organize personnel in study fields with notable problem-solving capacities in science and technology. In the meantime, increasing numbers of specialists and scholars in higher/tertiary education institutions are involved in consulting and research and in surveys and analyses of macro-policies at national and regional level.

At present, two-thirds of the national key laboratories are located in universities. Some provincial and ministerial laboratories have also been set up in universities and colleges. All these constitute an important part of the national knowledge innovation system.

Over the past decade, the varied forms of co-operation between the higher/tertiary education institutions, research agencies, and industrial enterprises were established and played an increasingly significant role in regional economic and social development.

University science parks represent a new form of such co-operation. They have become bases for incubating innovative technical enterprises, for training innovative entrepreneurs, and for developing high-tech industry, markets for scientific and technological achievements, and centers for financial information. In 2000, the Ministry of Education and the Ministry of Science and Technology jointly designated fifteen national science parks to be attached to universities on an experimental basis.

More such arrangements will be undertaken in the coming decades. The construction of science parks in universities has been incorporated into the national "Torch Programme" for tackling hard-nut problems in science and technology. From 2001 to 2005, the government will establish some 100 national science parks to be gradually attached to universities.

6. THE EXPANDING ROLE OF THE INFORMATION AND COMMUNICATION TECHNOLOGIES AND THE INTERNET IN THE DELIVERY OF HIGHER/TERTIARY EDUCATION AND IN CREATING A LIFELONG LEARNING SYSTEM

Owing to limited resources in the development of higher/tertiary education, the distance higher/tertiary education network has been highly valued by the population. The high enrollment figures in the China TV/Radio University are good evidence in this respect.

The distance education system for higher/tertiary education was established through the use of satellite television which has remained the principal media since the late 1970s. Recently, the development of information and communication technologies has brought about the possibility of using the information and communication technologies (ICTs) and the Internet in the field. At present, the China Education and Research network (CERNET) is the largest academic network in China with over 2 million users. Since 1999, the central government has been allocating special funds to build a high-speed main network. All the universities and colleges are linked to CERNET and to the Internet.

In 1999, six universities – among them the University of Beijing and Tsinghua University – opened network universities (e-universities). By the

2000-2001 academic year, the Ministry of Education had approved thirty-one network universities. They will help train senior special personnel as public servants. More importantly, the network universities can ease the effects of contradictions caused by the irrational distribution of resources for tertiary education. Increasing numbers of people will have the opportunity to receive quality higher/tertiary education through the network. And it will provide employees and citizens with a more effective means to continue their lifelong learning endeavours.

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XII. The Japanese Perspective on the Design and Use of System-Level Indicators for Higher/Tertiary Education

AKIRA ARIMOTO, AKIYOSHI YONEZAWA, HIDETO FUKUDOME, and MASAKAZU TAKEUCHI

1. INTRODUCTION

This study presents a Japanese perspective on the current status and problems related to the design and use of system-level indicators for higher/tertiary education.

First, the historical development of system level information on Japanese higher/tertiary education will be explained, especially in relation to Japanese trends in higher/tertiary education policies. Second, this study examines the current status of higher/tertiary education in Japan in relation to the UNESCO Action Plan. Third, it considers the possible further development of Japanese indicators in the context of the development of system-level strategic indicators by UNESCO.

2. DEVELOPMENT OF SYSTEM-LEVEL INDICATORS

2.1. Historical Development of Statistics on Higher/Tertiary Education in Japan

Statistical data collection on higher/tertiary education has a long history in Japan. The Ministry of Education (MEXT) has been collecting basic data on higher/tertiary education since the establishment of modern public higher/tertiary education in Japan in the latter half of the Nineteenth Century. The Ministry of Education has been publishing its *Annual Report* since 1875. This *Annual Report* has been reporting basic information concerning higher/tertiary education – numbers of schools, students, and staff – in a frequently changing content and format.

After the Second World War, the basic structure of the current higher/tertiary education system was devised. To follow twelve-year primary and secondary education, four-year undergraduate programmes and two-year junior college programmes were introduced, according to the American model. Four-year undergraduate programmes were introduced in 1949, and junior college programmes, in 1950. In addition to the university and junior college systems, the system of colleges of technology was established in 1962, as one of the types of higher/tertiary education that provides five-year education following nine years of compulsory education. In 1976, the specialized training college system started as two-year programmes of non-university higher/tertiary education.

In 1948, the Ministry of Education began compiling the *School Basic Survey* that has been published since 1952 as an independent publication. This survey lists the numbers of schools, students, applicants, and enrollments, as well as the numbers of graduates and teaching and non-teaching staff members. It also gives information on the destination of students after graduation, on graduate schools, and on the financing of public institutions (MEXT, 1948-2000).

The Ministry of Education has also endeavoured to collect information concerning overseas higher/tertiary education. It has a very strong division for the collection of data and information concerning foreign education. In general, this approach has worked quite well. It has been able to provide the Japanese government with data that are not available in the existing data sets collected and reported by international organizations.

The Division of Survey and Statistics in the Ministry of Education has been publishing its annual report, *International Comparison of Educational Indicators*, since 1969 (MEXT, 1969-2000). The successive issues of this report publish basic indicators such as enrollments, participation rates, the proportion of graduate students, student/teacher ratios, educational expenditures, tuition fees, and the student loan schemes of "competitors", *i.e.*, the United States, the United Kingdom, France, Germany, Russia, and China. Moreover, the division has published many survey reports and data on educational systems all over the world.

Comparative studies by academics have also contributed to the development of indicators and information concerning higher/tertiary education. In 1989, the Research Institute for Higher Education of Hiroshima University published the first longitudinal data collection on higher/tertiary education in Japan (Research Institute for Higher Education, Hiroshima University, 1989 and 1995).

Other related data, such as data on labour, population, industry, science and technology, and family income have also been collected by various ministries and institutions.

2.2. Introduction of Planning in Higher/Tertiary Education

Higher/tertiary education policies have relied heavily, and for a long time, on the qualitative and quantitative analyses of collected data. In this respect, the Japanese government has made use of many indicators for decision-making in the elaboration of higher/tertiary education policies, sometimes quite strategically. However, it is also true that other social and political factors have influenced higher/tertiary education policies.

Before the Second World War, public higher/tertiary education institutions were established on the basis of geographically balanced public planning. However, the rapid expansion of the private sector in the 1960s made it almost impossible for the national government to limit the over-concentration of institutions in the larger cities. Even in 1951, about 70 percent of university students lived in the major urban areas, and more than 60 percent of private university students lived in Tokyo.

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In the late 1960s, a serious attempt was made to prepare policy reports with comprehensive data analyses. The 1971 report by the Central Education Council consisted of comprehensive analyses of the development of the modern education system and projections regarding future enrollments in higher/tertiary education (Central Education Council, 1971). The report was used as a powerful policy document to support the introduction of the Higher Education Plan in 1976 (Kuroha, 2001).

At that time, the balance between the quality and the quantity of higher/tertiary education became a most critical issue. Japan experienced a rapid and unprecedented expansion of higher/tertiary education in the 1960s. This expansion led to the weakening of the quality of education and to political controversy, including the stimulation of student movements.

Another important issue, at that time, was that of the equality of access for different economic and social groups. In Japan, the mass higher/tertiary education system has relied heavily on the private sector. The difference between the sizes of the tuition fees charged, respectively, by the public and private sectors became a crucial inhibitor of equality of access. This situation led to the introduction of public subsidies for the operational costs of private institutions.

The over-concentration of higher/tertiary institutions in the big cities also became a political issue. The rapid expansion of mega-cities, such as Tokyo and Osaka, in the process of economic "take-off", attracted young people to live in them. As private institutions placed their campuses so as to maximize their economic benefits, the drain of young people from local areas into city areas became a critical issue. The government introduced the Higher Education Plan in 1976, and the establishment and expansion of schools in large cities were prohibited.

Following the introduction of the Plan, the quality of higher/tertiary education improved a great deal, especially in the private sector. The quantitative indicators revealed improved "quantitative aspects" in the quality of education.

The accessibility of women as students to four-year higher/tertiary education programmes still remains an important challenge. Women still face difficulties in obtaining employment after graduation; however, a law calling for equality in recruitment was enacted in 1986.

2.3. Quantitative Indicators to Qualitative Indicators

In the 1990s, the focus of university reform moved to the qualitative aspects of education. Organizational reform, the introduction of self-monitoring and evaluation, and curriculum reform were monitored through national surveys by academics, ministries, and other associations and companies (MEXT, 1999).

Commercial university guides also established an information market on higher/tertiary education institutions, including multiple indicators regarding student satisfaction, academic prestige, and other kinds of

indicators. At least to some degree, these developments have contributed to university reform.

2.4. Enter the Institutional Level Data Base System

The most recent transformation in Japan is that the various institutional data have become available, adding to the traditional system-level aggregate data. Each institution, particularly since the 1990s, has been asked to carry out self-evaluation and to periodically publish these data as self-study reports. The total number of these reports is already legion.

In addition, several national institutes for specific tasks have provided databases concerning institutional-level data. The National Center for University Entrance Examinations (NCUEE) founded an online information system, called the Heart System, in order to provide applicants with information on universities. In 2001, the Heart System became an Internet-based service. Both quantitative and qualitative information can be drawn from this online database.

The National Institute of Informatics (NII) provides a database on individual researchers, academic work, public databases, etc. This information is quite important to the development of qualitative indicators related to research and development.

The National Institution for Academic Degrees (NIAD) has started a pilot project on quality assessment for national universities. Assessment will be implemented for education and research activities according to academic fields. At the same time, NIAD is implementing a thematic review. In this activity, all the national universities will be assessed both at system-level and at institution-level according to specific criteria.

3. THE CURRENT STATUS OF HIGHER/TERTIARY EDUCATION IN JAPAN – WHAT THE INDICATORS REVEAL

3.1. Can One Say that What the Indicators Reveal Has Already Been Achieved?

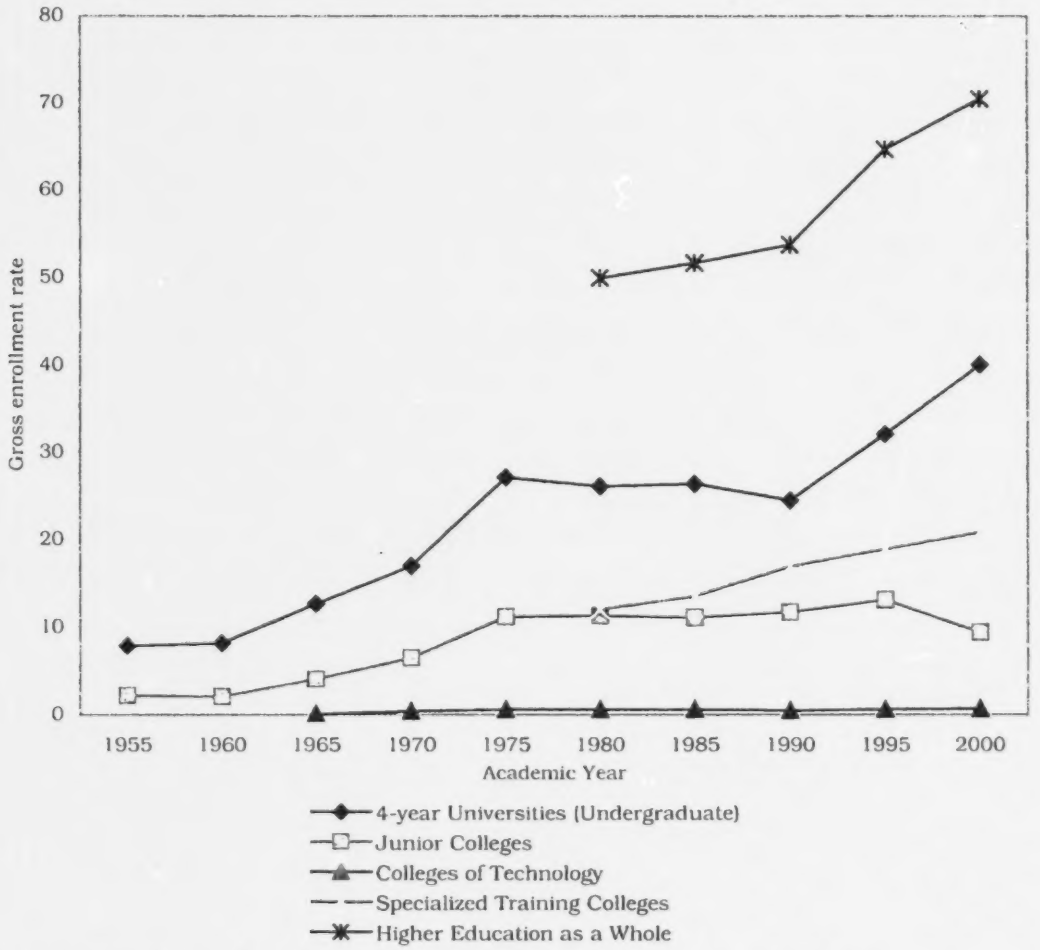
The Japanese government has accomplished most of the tasks set out in the two UNESCO policy documents: *Higher Education in the Twenty-First Century* (UNESCO, 1998a), and *Framework for Priority Action for Change and Development of Higher Education* (UNESCO, 1998b), through reference to indicators available from public documents. However, it is obvious that most of these indicators need to be viewed as "qualitative", and that some goals are sometimes too abstract to be identified by appropriate quantitative indicators.

3.2. Equity of Access

Japan had achieved mass higher/tertiary education by the early 1970s. The decrease in the number of secondary school graduates and the continued establishment of new higher/tertiary education institutions contributed to the present situation in which 49.4 percent of high school graduates continue to study in four-year universities and junior colleges and 70.5

percent in higher/tertiary education institutions as a whole (Figure 1). According to a simulation exercise of the University Council, by 2008, all eighteen-year old students who wish to enter four-year universities and junior colleges will be admitted somewhere in an institution of this sort, by the effect of the decline in the numbers of the eighteen-year old cohort. As a result, the access ratio to colleges and universities is expected to increase up to 60 percent of the cohort.

Figure 1. Percentage of eighteen-year olds studying in various Japanese higher education institutions (1955-2000)



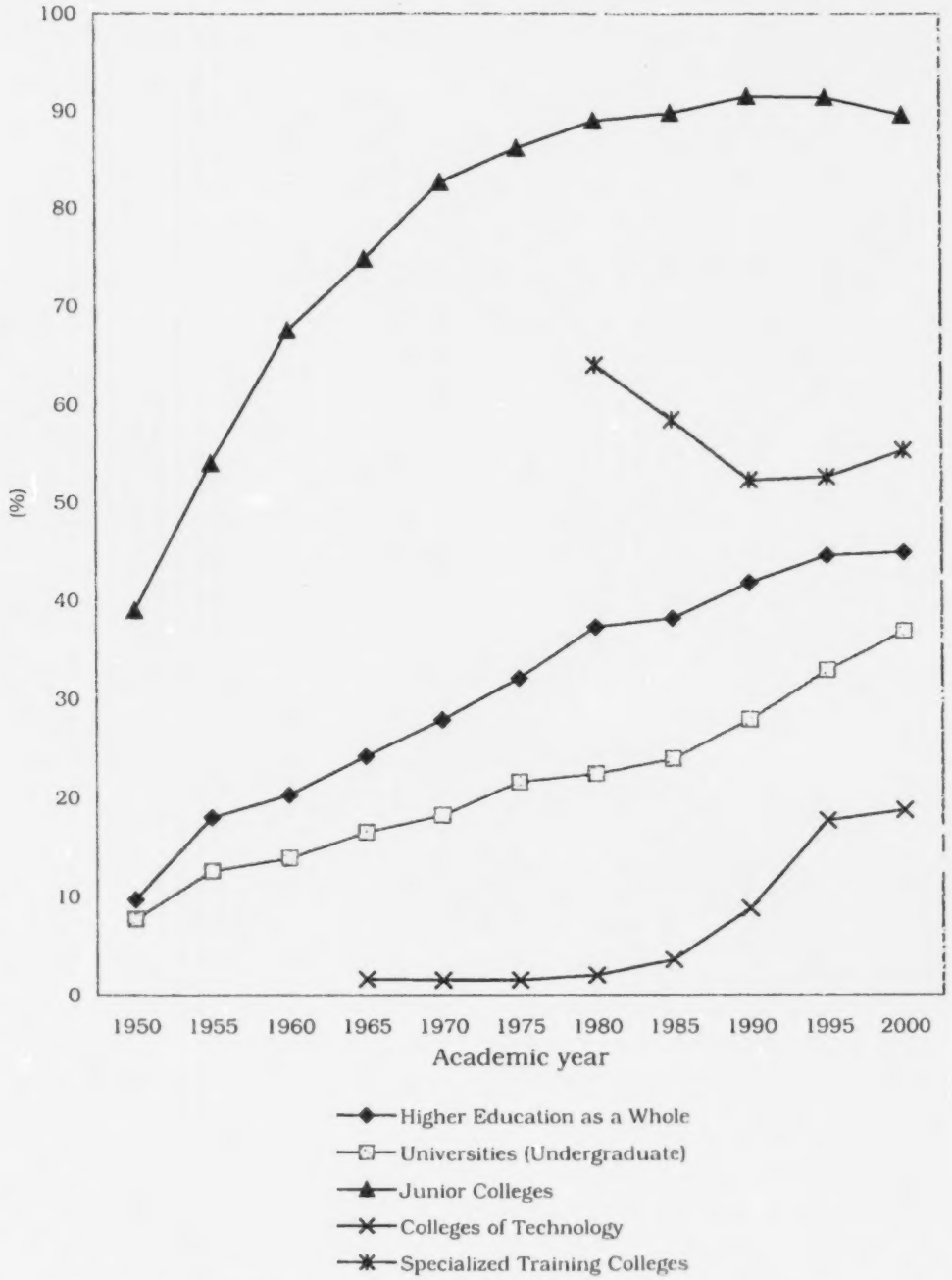
Source: MEXT, *Gakko kihon Chosa hokokusho* (Report of school basic survey) (1955-2000).

3.3. Enhancing the Participation and the Promotion of Women

At present, the total number of women enrolled in higher/tertiary education is almost the same as that of men. However, there are large differences in the proportions of women among different types of higher/tertiary education. The percentage of women studying in the university sector (undergraduate) is relatively low. Meanwhile, almost 90 percent of the junior

college students are women. Also, over half of the students in specialized training colleges are women. In short, educational opportunities for women are limited to those providing higher/tertiary education over relatively short study periods (Figure 2).

Figure 2. Percentages of women students in various stages of higher education



Source: MEXT, *Gakko kihon Chosa hokokusho* (Report of school basic survey) (1955-2000).

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3.4. Advancing Knowledge through Research in Science, the Arts, and the Humanities, and the Dissemination of Results

The budget for Research and Development (R&D) increased through the 1990s. At the same time, the linkage between the universities and industry has recently been strengthened (Arimoto, 2000; Asonuma, 1999). The implementation of science policy was affected by the integration, in 2001, of the former Ministry of Education and the former Ministry of Science and Technology. The Ministry of Education published *Indicators for Science and Technology 2000* (MEXT, 2000). The numbers of graduate students and researchers, along with indicators showing outcomes, such as the numbers of publications and citations, are included in this report. According to these data, the number of publications by Japanese researchers is the second largest among the seven major industrial countries (the proportion is over 10 percent following about 33 percent for the United States, which is exceedingly high), but the index of the relative citation of these publications is the lowest among the countries in question.

3.5. Strengthening Co-operation with the World of Work and Analyzing the Anticipation of Societal Needs

Education and training, with a view to improving problem-solving abilities, are being stressed in current higher/tertiary educational reforms. The linkage between the world of work and university education, particularly at graduate level, is becoming important, and increasing numbers of workers, especially the people employed in professional work, are returning to campus to obtain systematic skills.

The lifelong employment tradition in Japan is being questioned. The boundary between education and work is becoming unclear. Many universities are allowing adult students to enter by special admission, and more and more adult students are making use of this system. However, the Japanese public survey lacks precise data on student numbers by age group. Data on lifelong learning should be developed to enable an understanding of current changes in the labour customs in Japan.

3.6. Diversification for Enhanced Equity and Opportunity

The Japanese higher/tertiary education system is highly diversified. Private higher/tertiary education is helping to sustain mass higher/tertiary education: 76 percent of the institutions are private, and 78 percent of the total number of students are enrolled in these institutions (Table 1 and Table 2).

Also, the diversity of educational programmes is increasing. The indicators that can be utilized to measure this change include the following: deregulation of admission requirements and of the number of years needed to graduate, the increase of non-degree students and transfer students, special admission for adult students, development of the credit transfer system, evening graduate programmes, etc.

Table 1. Number of higher education institutions in Japan by type and control (2000)

	Total (Universities, Junior Colleges, Colleges of Technology)	Universities	(Universities which provide graduate education)	Junior Colleges	Colleges of Technology	Specialized Training Colleges
Total	1,283	649	479	572	62	3,003
(%)	100.0	100.0	100.0	100.0	100.0	100.0
National	173	99	99	20	54	130
(%)	13.5	15.3	20.7	3.5	87.1	4.3
Local public	132	72	50	55	5	208
(%)	10.3	11.1	10.4	9.6	8.1	6.9
Private	978	478	330	497	3	2,665
(%)	76.2	73.7	68.9	86.9	4.8	88.7

In addition, there is one Air University.

Source: MEXT, *Gakko kihon chosa hokokusho* (Report of school basic survey) (2000).

Table 2. Numbers of students in higher education institutions by type and control (2000)

	Total (graduates of and undergraduates in junior colleges and colleges of technology)	Graduates	Undergraduates	Junior colleges	Colleges of technology	Specialized training colleges
Total	3,663,060	205,311	2,471,755	327,680	21,006	637,308
(%)	100.0	100.0	100.0	100.0	100.0	100.0
National	641,316	128,624	471,631	7,772	18,417	14,872
(%)	17.5	62.6	19.1	2.4	87.7	2.3
Local public	156,820	9,719	9,3062	21,061	1,652	31,326
(%)	4.3	4.7	3.8	6.4	7.9	4.9
Private	2,864,924	66,968	1,907,062	298,847	937	591,110
(%)	78.2	32.6	77.2	91.2	4.5	92.8

Source: MEXT, *Gakko kihon chosa hokokusho* (Report of school basic survey) (2000).

3.7. Innovative Educational Approaches

In general, the Japanese Government is recommending innovative and unique educational approaches. Recent educational approaches in Japanese higher/tertiary education that can be indicated by specific data include the following: the reform of education for information processing, the introduction of new courses regarding volunteer activities, the adoption of the semester system, the dissemination of systematically compiled syllabi among students, the equipping of the distance education system, the use of teaching assistants, the deregulation of admission requirements and of

study years required for graduation, the reform of language education, the increase in the number of small classes.

3.8. Higher/Tertiary Education Staff and Students as Major Actors

National policy strongly recommends the setting up of faculty and staff development programmes. Thus, many universities are adopting them. According to the international study on academic professions of the Carnegie Foundation for the Advancement of Teaching (Arimoto, 1996), Japanese professors tend to categorize themselves as researchers rather than as teachers in terms of the priorities they accord to involvement in academic work. Among the respondents to the relevant questionnaires, approximately 70 percent of Japanese academics call themselves researchers, and 30 percent stress that they are teachers.

This traditional view that probably stemmed from the German model is running into difficulties at a time when the improvement of teaching is increasingly required in order to respond to the massification of higher/tertiary education. In general, almost all faculty in Japanese universities were hired, until quite recently, with tenure. Based upon a new law concerning faculty employment, enacted in 1997, the introduction of a non-tenure employment system is being recommended.

As an example of the indicator of this policy change, a government survey indicates that, recently, twenty-one universities have adopted non-tenure systems for some of their faculty positions. In 1999, there were ninety-nine non-tenured posts in total. At the same time, the practice of student evaluation of educational programmes in Japan is rapidly expanding.

3.9. Qualitative Evaluation

In the 1990s, a self-evaluation system was circulated among Japanese higher/tertiary education institutions. As of 1999, 533 universities or 88 percent of the total number of institutions were applying self-evaluation. In addition, 94 universities (16 percent) invited external examiners to verify their self-evaluations. NIAD has established a system for the evaluation of the national universities. Also, the Japanese University Accreditation Association (JUAA) has been working for about sixty years, since its establishment in 1946. Accreditation boards for professional or specialized study areas, such as the Japan Association Board of Engineering Education (JABEE) began to engage in accreditation activities aimed at obtaining international recognition for their qualifications. Related to qualitative evaluation, arguments inside and outside academe are being voiced about the scholastic abilities of students. Nowadays, universities should cater to student diversity at entry, before they begin studying at higher/tertiary level. Adequate and accurate statistics on student preparedness based on nationwide surveys of student abilities are needed. There is also a need to establish standards of student scholastic ability at higher/tertiary education level.

3.10. Strengthening Higher/Tertiary Education Management and Financing

Up until now, all of the national universities in Japan have been regarded as a part of the system administered by the Ministry of Education. However, their status as national institutions is now in the process of transformation so that each one will have the status of an "Independent Administrative Corporation". The introduction of corporate-style management into universities requires the strong leadership of the presidents of each institution. However, there is no proper indicator for this type of empowerment for university heads.

3.11. The Financing of Higher/Tertiary Education as a Public Service

There are four streams of major government allocations for higher/tertiary education: *(i)* funds transfers from a special account to the national schools; *(ii)* current cost subsidies to private higher/tertiary education institutions; *(iii)* science research grants; *(iv)* credit loans to the Japan Scholarship Foundation. In 1998, each item occupied 74.7 percent, 14.4 percent, 5.7 percent, and 5.2 percent, respectively, in the total government expenditure.

Table 3. Government expenditure for higher education by country (as a percentage of GDP), 1997

	Percentage of GDP
The United States	1.4
The United Kingdom	0.7
France	1.0
Germany	1.0
Canada	1.2
Australia	1.0
Denmark	1.1
Italy	0.6
The Netherlands	1.1
Spain	0.9
Austria	1.3
Sweden	1.6
Switzerland	1.1
Japan	0.5

Source: *Daigaku Singikai* (University Council). *Global-ka jidai ni motomerareru koto kyoiku no arikata ni tsuite* (A Vision for Higher Education in the Global Society) (2000), p. 90.

The national government started to subsidize private institutions in 1970, based on the concept that equal opportunity for education should be protected by the national government. As the higher/tertiary education system is heavily dependent on the private sector, the amount of public aid to private institutions could be a good indicator. Also, recently, the numbers of student loans offered by the Japan Scholarship Foundation have rapidly increased.

In Japan, the rate of government allocations from GDP for higher/tertiary education is seriously low when compared with the rate in other major developed countries. For example, in 1997 the government of the United States spent a total of 1.4 percent of its GDP on higher/tertiary

education, while that of Japan, only 0.5 percent (Table 3). However, as a result of the current recession, it is difficult for the Japanese government to improve this situation, therefore each institution is being forced to secure its own capital.

3.12. Globalization

The number of students in Japan from foreign countries is increasing. Most of them are coming from Asian countries, particularly from China and Korea. In 1999, students from these two countries represented 46.5 percent and 21.3 percent, respectively, of the total percentage of foreign students.

The problem is that only small numbers of students come from countries other than Asian countries. For example, only 1.9 percent of all foreign students are from the United States, and this rate is the highest for all the developed countries. Another problem is that only a small proportion of foreign students come to Japan with grants or scholarships from their home countries. In 1999, only 18.5 percent of them received such grants or scholarships.

The numbers of faculty members from foreign countries are rapidly increasing. In 1998, there were 4,612 full-time faculty members from foreign countries in Japanese four-year universities. These numbers more than doubled through the 1990s: in 1990, there were only 2,183 foreign university professors.

Japanese students who study abroad have always exceeded the numbers of foreign students studying in Japan. In 1999, more than 75,000 Japanese students were studying abroad compared with 55,755 students from foreign countries studying in Japan.

In 2000, the University Council published its report on the strategic planning of higher/tertiary education in a global society. The rapid development of e-learning among Asian countries is exerting heavy pressure for the internationalization of Japanese higher/tertiary education. Indicators for this phenomenon need to be developed.

3.13. Partnerships and Alliances

There are several local, national, and international partnership bodies and alliances involving Japanese higher/tertiary education institutions. A major example is the alliance linking four national universities in the Tokyo area: the Tokyo Medical and Dental University, the Tokyo University of Foreign Studies, the Tokyo Institute of Technology, and Hitotsubashi University. These four universities co-operate with one another for the exchange of course credits and in other ways.

Another example is the Kyoto Consortium. Fifty universities in Kyoto, including national, local public, and private institutions, co-operate through this organization for credit transfer, internships, public lectures, information exchanges, and the effective use of educational resources for students and society. The mutual recognition of the credit system could be an indicator that shows the dissemination of this kind of partnership and

alliance. Partnerships and alliances are thought to be useful, and more are being established. However, quantitative indicators of these developments are not available.

4. FURTHER DEVELOPMENTS AND CHALLENGES

The comprehensive domestic data collection system provides useful data, well suited for the demands related to the specific social context. However, for the further development of indicators and information on higher/tertiary education in Japan, some aspects of the present data need to be expanded. For example, in the field of lifelong learning, the data are not well developed because of the unique structure of the labour market. In addition, most of these data are not comparable with international common data sets, for example, those of OECD.

Current trends in globalization increase the necessity for international discussions and/or joint networks to formulate international indicators. At the same time, data collection by international organizations can be criticized, if insufficient attention is paid, in a balanced way, to the different social needs among the member countries. The globalization of the world economy, and the increasing global exchanges of educational services, knowledge, and technology transfers among nations increase the need and raise demands for Japanese education policies to fit into the international context.

The science and technology of Japan will become more visible through efforts to provide information to international information data sets. This effort in itself will attract potential students and stimulate the undertaking of projects in international co-operation to which Japanese higher/tertiary education can contribute.

International efforts to develop strategic indicators are of great value. However, these activities have to be assessed from various social perspectives. What would be the impact of the introduction of standardized indicators among different social contexts? Would they genuinely support higher/tertiary education reform in the respective countries? Would they lead to fair competition among different social systems? These issues need to be cautiously examined.

In this article, we have briefly discussed the development of qualitative indicators for the policies for higher/tertiary reform in Japan. Clearly, the establishment of such indicators provides strong incentives for achievement within the system. At the same time, mechanical or bureaucratic approaches to the quantitative surveying of qualitative matters may not lead to substantial reforms. Rather, they may fall into the trap of mere improvement of the paper work.

Indicators linked with specific objectives may certainly detect short-term changes in higher/tertiary education. However, these indicators are not always suitable for long-term longitudinal study, since they are often derived from *ad hoc* surveys implemented to meet the short-term needs of the government. For this reason, it may be difficult to persuade

governments to establish globally common and stable indicator sets that may not be directly related to specific domestic reforms.

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XIII. The Perspective of the United States Regarding System-Level Indicators for Higher Education

JAMIE P. MERISOTIS

This article briefly covers two areas. The first has to do with how the United States of America collects and disseminates information and data about higher education and how it develops its indicator systems. Secondly, it embodies a proposal relative to the organization of indicators for purposes of public dissemination.

1. HIGHER EDUCATION DATA COLLECTION IN THE UNITED STATES

The American system of indicators is very large, the reason being that the American higher education system is itself very large. There are over 3,300 degree-granting colleges and universities and approximately 4,000 non-degree-granting colleges and universities in the American post-secondary system. More than 15 million students are enrolled per year in American higher education, about 78 percent of those in public colleges and universities, and about 22 percent in private colleges and universities. The two-year sector of higher education is very large. Almost 50 percent of all the students enrolled in what is called "post secondary" or "higher education" institutions in the United States are in these two-year institutions. It is therefore not surprising that the United States has an array of indicator and data collection systems in play at a variety of levels.

The United States system is not – in any way, shape, or form – a national system of higher education. It is decentralized in many dimensions. There are a variety of data collection and dissemination mechanisms in play at the Federal, state, and local levels.

The Federal government plays a very large role in terms of data collection and dissemination in the American education system. The largest system that is in place in the United States is called the Integrated Post-Secondary Education Data System (IPEDS). IPEDS is a census survey of institutions, being a multi-part survey of all post-secondary institutions. The data available in its data bank is institutional level data. Institutions that fail to report data to this system are denied participation in Federal student aid programmes in the United States. This measure is taken to enforce compliance in terms of data reporting and, as a result, virtually all institutions do report to this system. IPEDS provides data in a variety of areas, including enrollment, completions, faculty salaries and rank, finance data, and extensive data on expenditures and revenues in higher education, libraries, and staff. The IPEDS data system is a very large data system that is easily found on the Internet. One may download unrestricted and

restricted data that are available for purposes of private analysis and that go back to the mid-1980s.

Another system in place is smaller, yet receives a great deal of attention. It is called the Student Right to Know Act, put in place in part because of a lack of accurate information about graduation and completion rates in American higher education. The only institution that published this kind of data before this law was passed was the National Collegiate Athletic Association (NCAA), which provided data on student athletes because of their large presence in American education. The collection of data on student athletes in turn caused the federal government to decide that it should be collecting the same data on all students in higher education. As a result, institutions are required to annually submit and disclose undergraduate completion and transfer rates. Again, these data are census-level data available from the institutions. The same penalties apply for lack of compliance.

There is also an enormous array of federal sample surveys that deal mostly with student-level data. Faculty-level and household-level information are available in these various surveys and deal with issues ranging from student financial aid and student finance to completion, beginning enrollment, and a variety of other matters. In these data sets, the data record is the individual student, so data analysis is possible for tracking or tracer survey purposes, based on student records.

The states also have a variety of data collection and dissemination systems. Performance reporting is proliferating in general. More than half of the states have some type of performance reporting system in place for the public colleges and universities and, in some cases, for the private colleges and universities located in them. The performance reporting systems report combinations of institutional and system-level data related primarily to the effectiveness and the efficiency of the operation of higher education in the given state. These systems vary significantly across states. Some have very large and complex data systems, with fifty, sixty, even eighty indicators that need to be reported by institutions. Other states, however, have only limited systems and only use five or six indicators.

In recent years, the publication of a report titled *Measuring Up 2000* by the National Center for Public Policy and Higher Education (NCPPHE, 2001), received enormous attention in the United States. It aggregated existing data and developed its own indicators on an individual-state-level that examined five areas of performance of higher education in each of the fifty states. These areas include preparation, participation, affordability, completion, and benefits. This report captured the attention of American policy-makers and legislators. The unit of analysis in this system is not the individual institution, but only aggregated, state-level data. In other words, the NCPPHE tries to measure the performance of the given state itself.

A variety of other systems also exists. The systems are sponsored by private entities, including NGOs, polling organizations, and research

centers. The ranking systems that have proliferated in the United States could be included in this category.

The American system poses several problems in terms of developing adequate indicator systems. One is that there is a cacophony of information uses and purposes for these data. We have so much data from so many different sources that it is quite confusing and in some ways can be deleterious to the policy development process. In addition, it takes a long time to develop and publish indicators, particularly at national level, as a result of this cacophony of information. A good example of this phenomenon can be seen in the case of *The Condition of Education*, published by the United States Department of Education. The most recent issue (2001) reports data from 1998 or earlier. Such data is very difficult to use for policy-making purposes because of the rapidly changing nature of the higher education enterprise. The market orientation of higher education is as much a characteristic of the United States as it is of most other countries. The use of technology, multimedia tools, etc., is significantly changing how higher education is delivered. These data systems are not well suited for measuring these kinds of changes.

A second problem is that the American system lacks integration and coordination. Data collectors in the United States fail to use the standardized OECD definitions for most of indicators. There is poor integration across the federal, state, and other systems. To same extent, this situation is understandable because of the strong bias against the development of national goals in American higher education. The single national goal that is universally recognized in the United States is access to higher education, and the support of access primarily through very large investments in student financial aid. Students receive approximately 40 billion dollars each year from the federal government alone in student financial aid, but the lack of national goals strongly discourages the effective coordination and integration of data systems.

There are also large and significant gaps in information that exist despite the overwhelming nature of data systems and innovative approaches. For example, it has been possible to obtain national-level data that look at differences between undergraduate students and graduate students in terms of the funding of higher education. The IPEDS data system does not allow the user to desegregate undergraduate and graduate expenditures and revenues, a situation that has very important implications for analysis and other issues in higher education.

The Institute for Higher Education Policy, an independent NGO in Washington D.C., is currently completing a Congressionally mandated study of higher education costs in the United States (available at <http://www.ihep.com/Org.php>). It is over 300 pages in length and uses a very complicated methodology in dealing with public and private institutions. The report says virtually nothing, however, because of a problem with the data system, therefore it is very difficult to arrive at true costs.

2. A PROPOSED METHOD FOR ORGANIZING INDICATORS

There is limited focus in the United States on international comparisons. If one goes to the United States government to find international comparisons, one will not find anything beyond information about the elementary and secondary education levels. Comparative information about the higher education level does not appear to be of interest at Federal level. There are very few connections made in the United States among international organizations, the absence of the United States from UNESCO for two decades being the most obvious example of such a lack.

The goal of the proposal is to articulate what higher education does for policy purposes. It should not, however, be construed as an argument for specific indicators, but rather as a way of organizing, at least some of these indicators, in ways that can be useful for policy purposes. The primary interest is in what the system is producing, based on the investment that has been made. When individual indicators are placed out in the public domain, they often lack context, a situation that can be dangerous in many cases. The proposal refers to the development of a conceptual framework for organizing the information. This conceptual framework, published by the Institute for Higher Education Policy a few years ago, reflects the benefits of higher education:

Table 1. Four categories of benefits

Private economic benefits
Private social benefits
Public economic benefits
Public social benefits

Source: Provided by the author

A reasonable number of indicators on an international or system basis, or on a cross-national or system basis, can be placed in each of the grids so as to articulate what higher education is doing. This kind of approach would allow different systems to use different indicators and to emphasize different types of benefits depending on the focus of the given system, while allowing for commonalties for organizing the indicators reported.

Table 2 is an example from the United States, based on the 1998 report by the Institute for Higher Education Policy. It is a framework using primarily output measures, but which would work for inputs as well. Based on data collected, the Institute was able to analyze, in an American context, the information in each of the four areas. The private economic part of the framework is what has received by far the largest public policy attention in the United States, because of the focus on market orientation. The Institute was able to use data developed by this framework in the policy debate to show that participation in higher education has other benefits. Obviously, there are challenges that can be made to each of these measures in terms of data quality, reliability, etc., but it was very useful in broadening the 1998 Higher Education Act discussions. This framework, that was helpful in the

specific case of the United States, could also be adopted in some limited cases in a cross-national context.

Table 2. A Framework for the different types of benefits provided by different systems of indicators

Benefits	Public	Private
Economic	Increased tax revenues	Higher salaries and benefits
	Greater productivity	Employment
	Increased consumption	Higher savings levels
	Increased workforce flexibility	Improved working conditions
	Decreased reliance on government financial support	Personal/professional mobility
Social	Reduced crime rates	Improved health/life expectancy
	Increased charitable giving/community service	Improved quality of life for offspring
		Better consumer decision making
	Increased quality of civic life	Increased personal status
	Social cohesion/ Appreciation of diversity	More hobbies and leisure activities
	Improved ability to adapt and use technology	

Source: Provided by the author

This framework of benefits could help drive the development of indicators. Over time, the point might be reached whereby cross-national policy development could be linked to this benefits analysis in a way that would benefit all the nations involved.

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XIV. Using System Indicators to Stimulate Policy Development

HERB O'HERON

In Canada, each province and territory has jurisdiction over educational issues. The provincial educational systems have developed in varying contexts and are designed in varying ways. As a result, even data describing the different education systems do not always conform to the same definitions. In short, Canada faces the same kinds of challenges in designing and using system indicators as UNESCO does in making comparisons among nations. Despite these challenges, it is clear that provincial governments in all parts of the country are indeed making increasing use of indicators to provide some measure of accountability to the public as well as to steer activities within the universities.

The Council of Ministers of Education, Canada, along with Statistics Canada, are increasingly relying on indicator reports to help compare and contrast the ten different post-secondary education systems that exist across Canada. In early 1990, the Ministers of Education in each province and territory agreed to create the Pan-Canadian Education Indicators Programme (PCEIP) in order to develop statistical information on education systems in Canada. The report from this project begins by outlining a series of indicators that help set the context in which provincial systems operate. The Pan-Canadian Indicators then provide key profiles of system characteristics, including students, human resources, and finance. Only then do they move into output and outcome measures such as labour market experiences for various groups of graduates.

There are also some emerging uses of indicators to augment the more established reports on system indicators. There are numerous examples of performance-based funding and performance contracts, including those recently negotiated between the Government of Quebec and universities in that province, but each of these new uses focuses on institutional rather than on system indicators.

1. THE USE OF INDICATORS BY THE ASSOCIATION OF UNIVERSITIES AND COLLEGES OF CANADA

The Association of Universities and Colleges of Canada (AUCC) has also been producing a series of indicators in a publication, *Trends: The Canadian University in Profile*. Published every three years, this publication identifies some of the important enrollment, faculty, finance, and research challenges faced by Canadian universities, along with some key international comparisons.

The use by AUCC of indicators goes well beyond the *Trends* publication, and increasingly, the indicators employed to highlight the challenges universities face are forward-looking and policy-oriented. They highlight factors that will undoubtedly affect the universities in the years ahead. They are the kinds of factors that cannot be ignored as policy is being developed and change is being considered.

This approach is the kind that Frans Kaiser (2003, in this volume, pp. 31-35) outlines in "System-Level Indicators for Tertiary/Higher Education: Some Notes on Requirements and Use". Here, Kaiser has focused attention on the design and use of indicators to help manage change, to be forward looking, and to be action-oriented. He notes that there is growing concern with content validity and a need for both ease of calculation and of interpretation. And he goes one step further in describing the importance of not using the indicators in isolation, by pointing out that indicators need to be combined into a map that emphasizes relationships and flows.

It was further suggested that "systemic indicators" should possess an additional important feature – they should stimulate the imagination of policy makers.

Indeed, stimulating policy dialogue is one of major roles of the AUCC. The Association lobbies the Federal government – especially with respect to university research and student assistance, in which the Federal government plays a direct funding role. The Federal government also plays an indirect role in the broader support of post-secondary education by providing funds transfers to provincial governments that have constitutional jurisdiction over education.

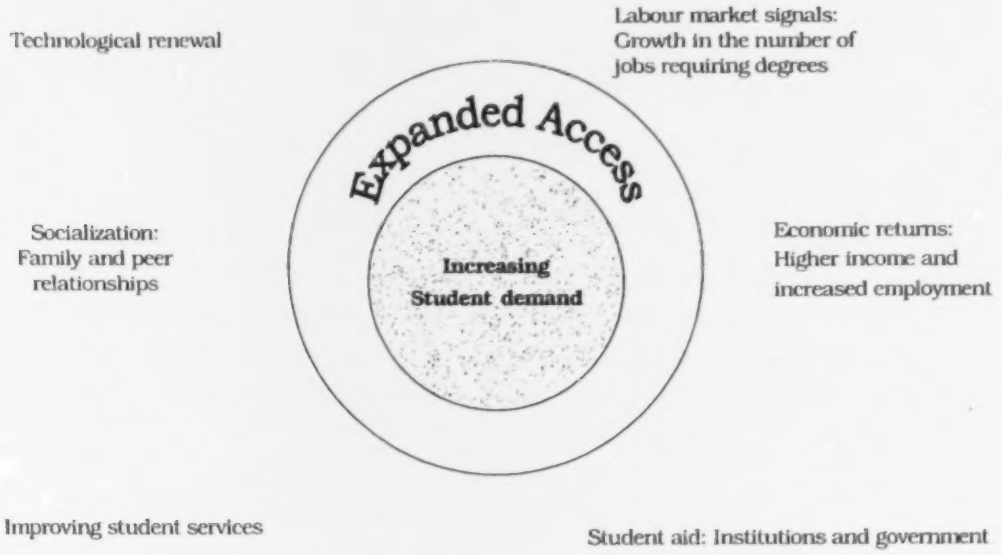
The AUCC has used indicators of enrollment demand to stimulate discussion about the expected level of university participation in the decade ahead. In this case, the target was broader than the Federal government. The messages were targeted at the member institutions of the Association of Universities and Colleges of Canada and to provincial officials with the goal of raising awareness and stimulating debate at all levels.

Figure 1 below summarizes some of the factors examined to demonstrate that the demand for university education should grow strongly in Canada in the coming decade. Indicators in each of these areas were used to focus the accessibility policy dialogue around the interrelated goals of capacity, quality, and equity. It has been argued that with little excess capacity in the system, access to universities could not be maintained – let alone expanded – without adding the requisite human and physical resources. Without those resources, quality would suffer and increasing student numbers, without maintaining quality, would not represent improved access at all.

To build consensus, AUCC began by assembling a number of indicators of factors that would most likely affect student demand in the decade ahead. The indicators included demographic change – the growing youth population and declining mid-career populations resulting from the baby

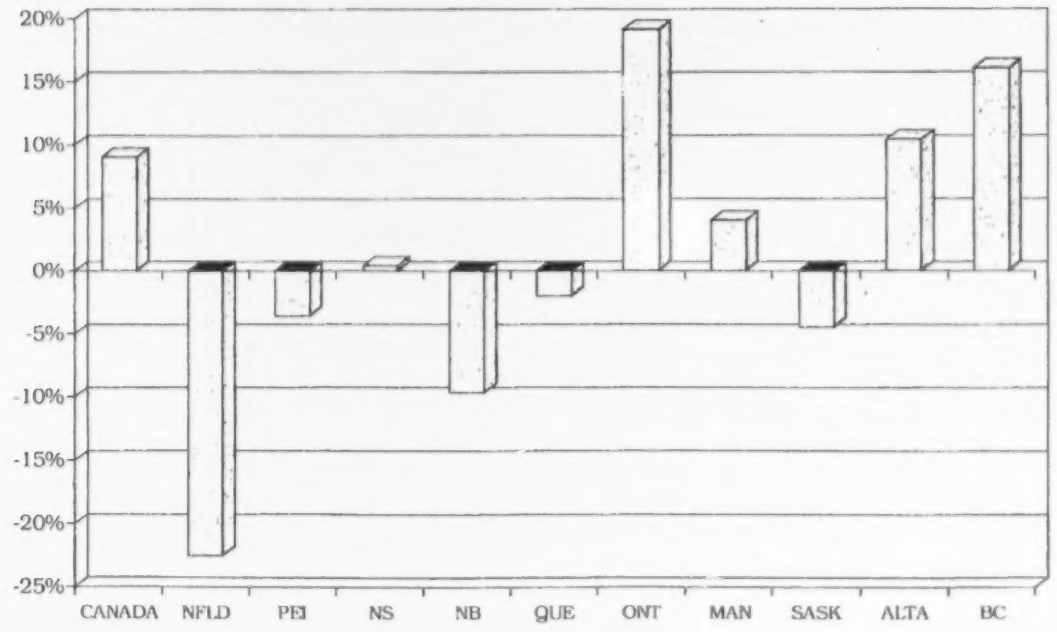
boom echo and the baby bust respectively – to help identify where student demand pressures were likely to occur.

Figure 1. Demographics: Growth in the youth cohort


Technological renewal
Labour market signals: Growth in the number of jobs requiring degrees
Expanded Access
Increasing Student demand
Socialization: Family and peer relationships
Economic returns: Higher income and increased employment
Improving student services
Student aid: Institutions and government

Source: Based on population projections of Statistics Canada (June 2001).

Figure 2. Canada: Youth population (aged 18 to 21)



Source: Based on population projections of Statistics Canada (June 2001).

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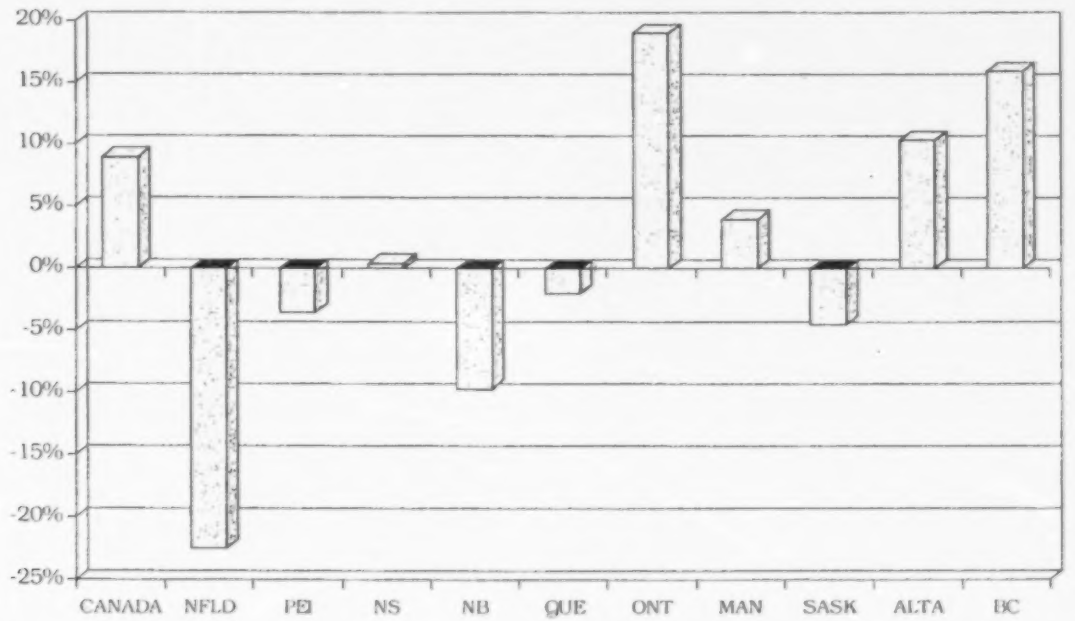
The indicator portrayed above shows that while the demographic pressures for growth are extremely strong in some parts of the country, other regions will face declines in traditional student populations. AUCC also demonstrated that shifts in participation rates could play a far more important role in enrollment change than demography. For example, as Figure 3 shows, during the 1980s, population in the most important student cohort fell by more than 20 percent, whereas the number of students coming from that cohort increased by 25 percent.

Figure 3. Shifts in the enrollment and population cohort aged 18 to 21



Source: AUCC based on Statistics Canada data (June 2001)

It was important to highlight these different demographic and participation pressures to demonstrate to Federal government officials that a "one size fits all" policy will not garner widespread support across the country. In a federal system like that of Canada, one-dimensional policies are unlikely to be effective or to be equally well received in all parts of the country.

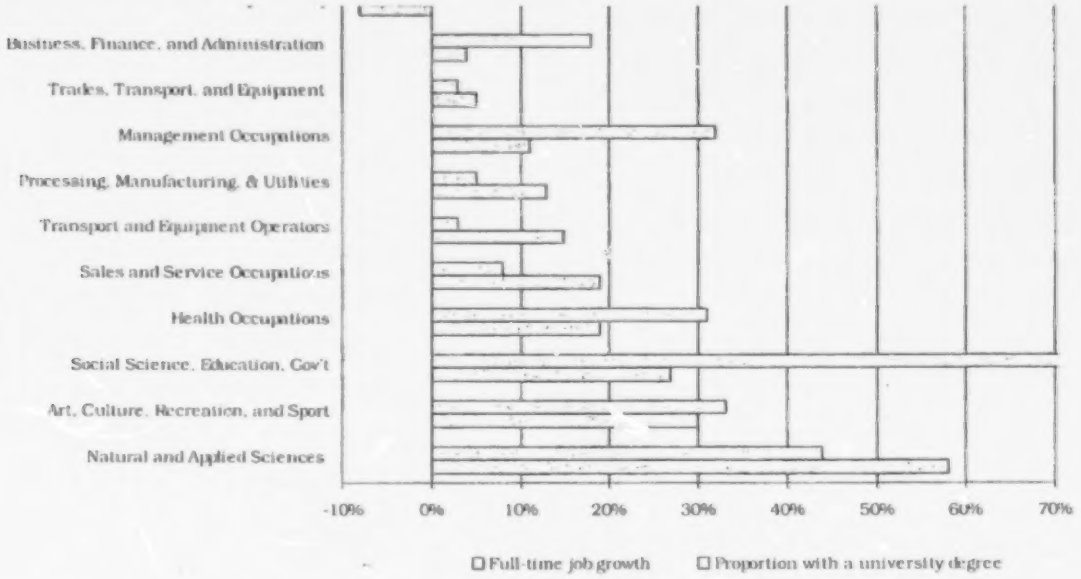
AUCC then looked at various factors that would likely affect participation rates. Indicators of shifts in labour market demand were examined to identify the types of signals that potential students might be receiving from the labour market. Over the decade of the 1990s, full-time job growth has been particularly strong in health, social science, education, government occupations, and natural sciences occupations.

Moreover, these are the very fields that require the highest levels of education; some 30 to 70 percent of the employees in these occupations hold university degrees.

It is clear that demand for highly qualified personnel will continue to expand and that students are indeed responsive to such signals.

AUCC looked at indicators of economic returns to examine the potential influence of income on the demand for university education. While it is generally recognized that earnings increase with age and experience, education plays a very important and under-acknowledged role in this equation.

Figure 4. The most rapidly growing occupations require the greatest amount of education – 1990 to 2000



Source: Statistics Canada, *Labour Force Survey* (2001).

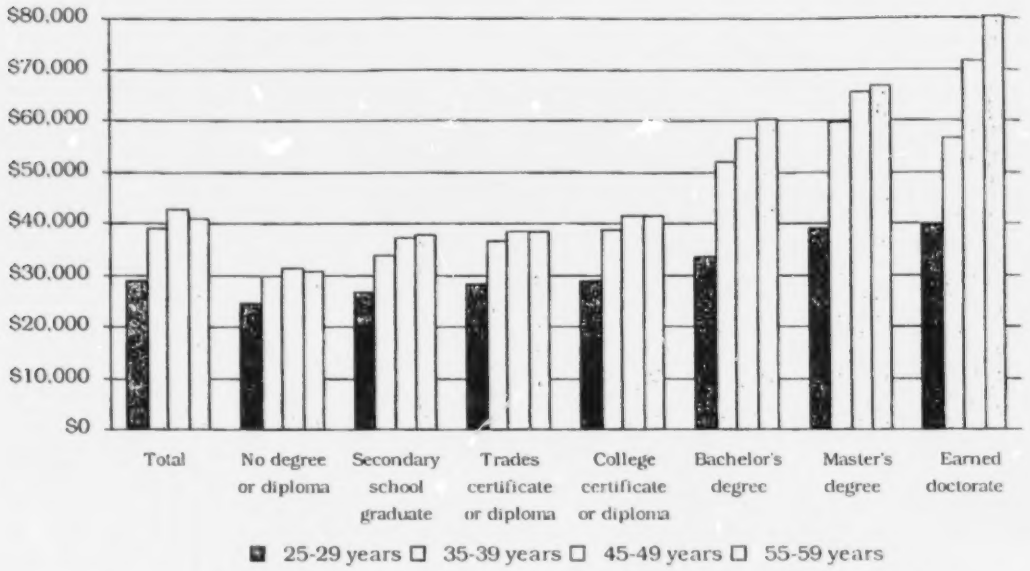
Income increases early in the careers of most employees, but flattens out quite soon for those with little education, while it grows continuously for university graduates. Incomes of university graduates start higher and increase rapidly early in the career. Income expansion continues throughout most of the career.

It is clear that the completion of a university education continues to be profitable – sending out yet another strong signal to potential students.

There is, nevertheless, concern that today's graduates will not enjoy these kinds of income profiles or premiums. However, some recent work by Statistics Canada dispels some of these concerns and strongly suggests that today's graduates can reasonably expect similar earning premiums in the future.

The next indicator examined the rather well-known relationship between income and university participation – those in the upper income quartile are twice as likely to have attended a university than those from the lowest quartile.

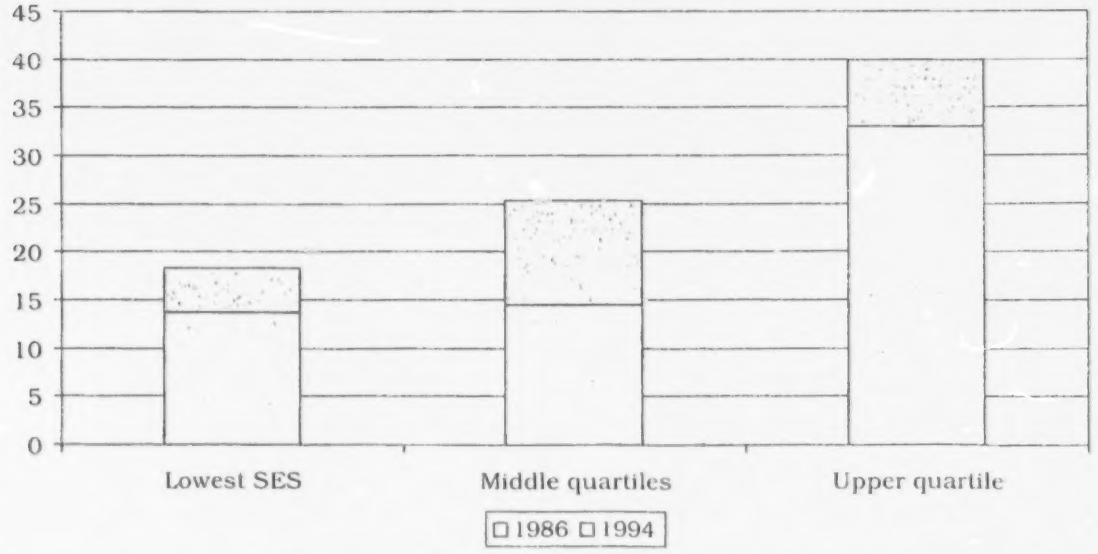
Figure 5. Income premiums increase with education and age



Source: Statistics Canada, *1996 Census*

While the data are now somewhat dated, Figure 6 indicates that while participation grew for children from all income backgrounds, the gap between the poor and the middle income groups expanded between 1986 and 1994. A new study just released by Statistics Canada suggests that the "access" gap between those in the highest and lowest socio-economic groups in 1998 remains quite similar to the 1994 levels.

Figure 6. Family income plays an important role in university participation

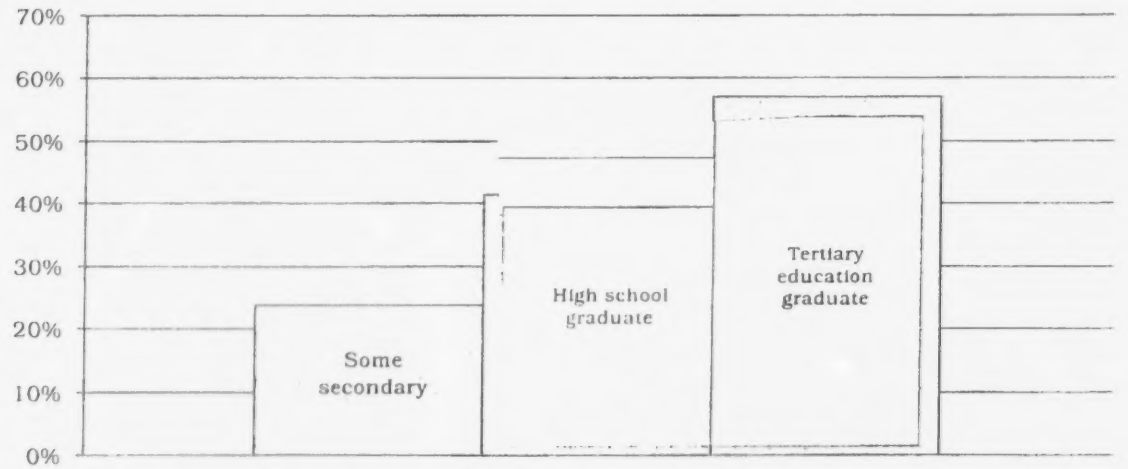


Source: Statistics Canada, *General Social Survey* (1994).

More importantly, these kinds of access indicators show that there is significant room for improved equity in university participation. AUCC has been, and continues to be, a strong advocate of enhanced student assistance and improved debt reduction measures to help individuals meet the full range of costs associated with seeking higher education. Over the last decade, Canadian universities have used some of their additional tuition revenue to more than triple their own scholarship and student aid programmes. Various forms of student aid combined with an expansion of the capacity of universities to encourage and meet enrollment demands will, together, create the conditions for expanding equitable access.

AUCC looked at indicators of the influence of parental education on today's youth (Figure 7). This indicator shows that on average it is likely that children in families in which the parents have attended a university have an advantage that goes beyond the financial support that such parents may be in an enhanced position to provide. These parents may also create a home environment that, on average, not only stimulates an enhanced attitude towards learning, but also encourages an increased understanding of the importance of post-secondary education and of the need to earn the grades to gain access to it.

Figure 7. Canada: Probability of completing tertiary education increases with the level of education of parents.



Source: AUCC using OECD data.

This indicator shows that many more of the baby boomers of today than adults in earlier generations have completed university degrees. When combined with the previous indicator, it helps demonstrate that the family environment will likely lead to greater social pressure on young people today to attend a university. Once again, another indication is provided that the demand for university education should expand over the coming decade.

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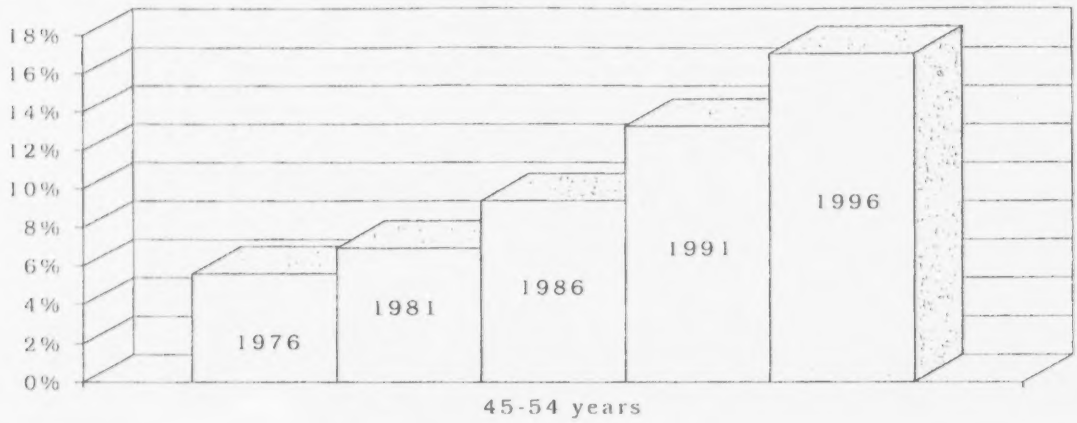
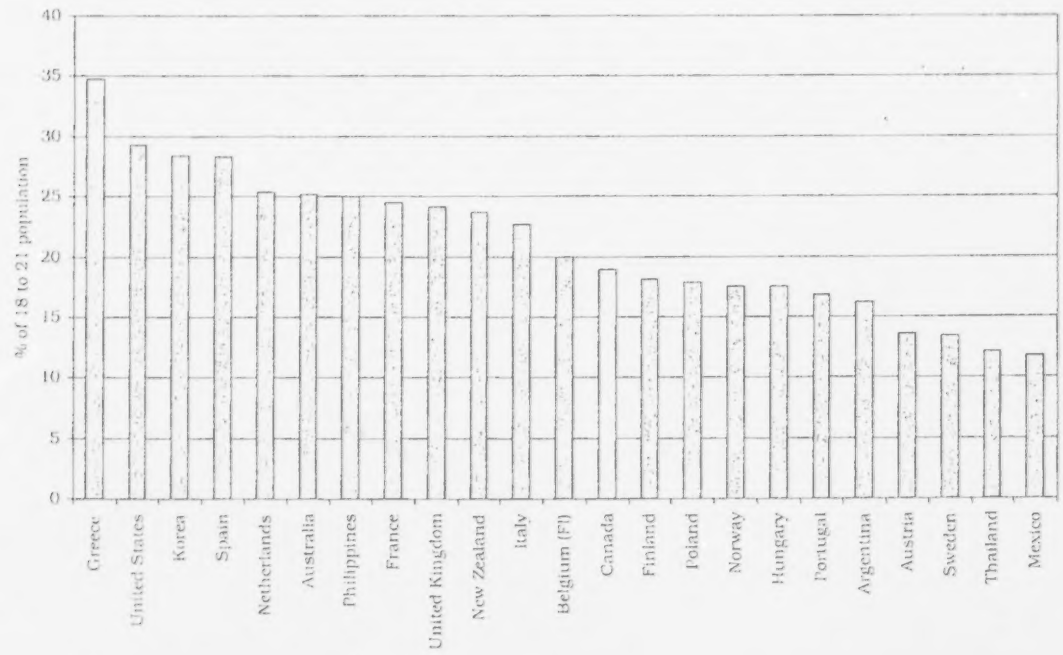
Figure 8. The growing educational attainment of parents should push up youth participation



Source: Statistics Canada.

System differences continue to make it difficult to interpret international participation rates. However, it is obvious that Canada is far from being a world leader in terms of university participation. Many nations surpassed the achievement of Canada in this regard during the 1990s, and others are closing previous participation rate gaps (Figure 9).

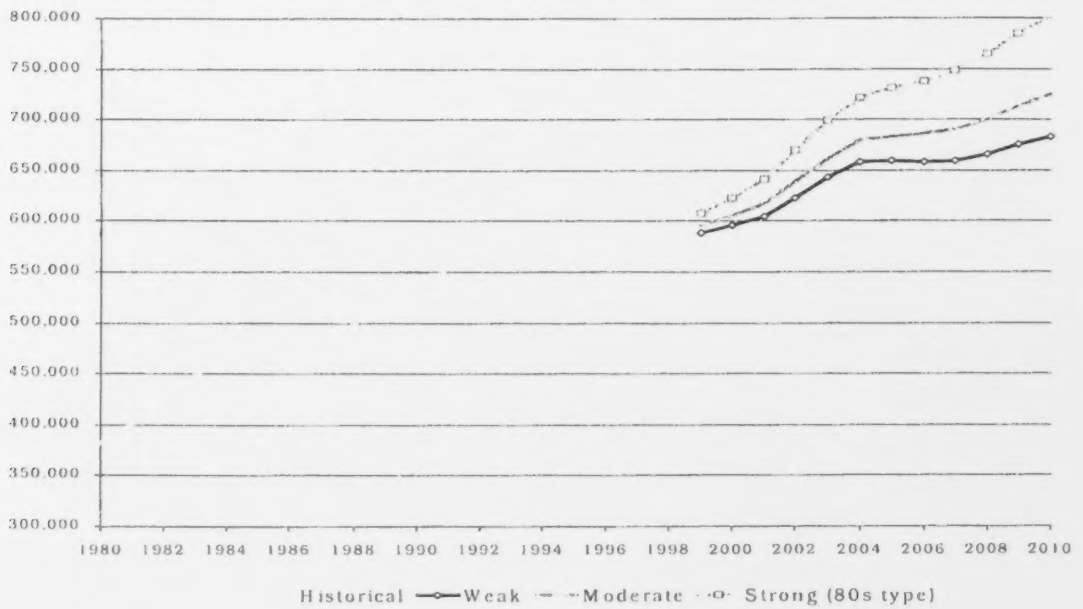
Figure 9. Nations having surpassed the Canadian level of university participation, 1998



Source: OECD Database, 2001.

This indicator also demonstrates the degree to which developed nations recognize the importance of university systems in becoming more knowledge-based. It also clearly highlights the need in Canada to establish targets for participation across all levels of the post-secondary system. For Canada to be among world leaders, its participation rates will have to increase significantly.

Figure 10. Projected full-time enrollment in Canadian higher education



Source: The author.

Combining the demographic indicators with the participation indicators leads to the projection of a very strong increase in student demand in the coming decade. However, even at the highest projected level, less than one-quarter of young adults will be enrolled in Canadian universities in a decade. Such trends are consistent with past growth in participation and other projections of the demand for university graduates on the labour market.

One of the most important implications of the expected enrollment growth is the impact it will have on faculty hiring requirements. If universities are to have the capacity to provide quality higher education to growing numbers of students, they will need to expand their human resources quite rapidly to match the expected enrollment expansion in the coming decade.

Universities are clearly not very well placed to enroll many more students without hiring more faculty members to teach them. Over the last twenty years, enrollments have increased by 60 percent, while faculty numbers expanded by only 8 percent. In fact, faculty numbers are now 12 percent below what they were in the mid-1990s. Even if faculty growth keeps pace

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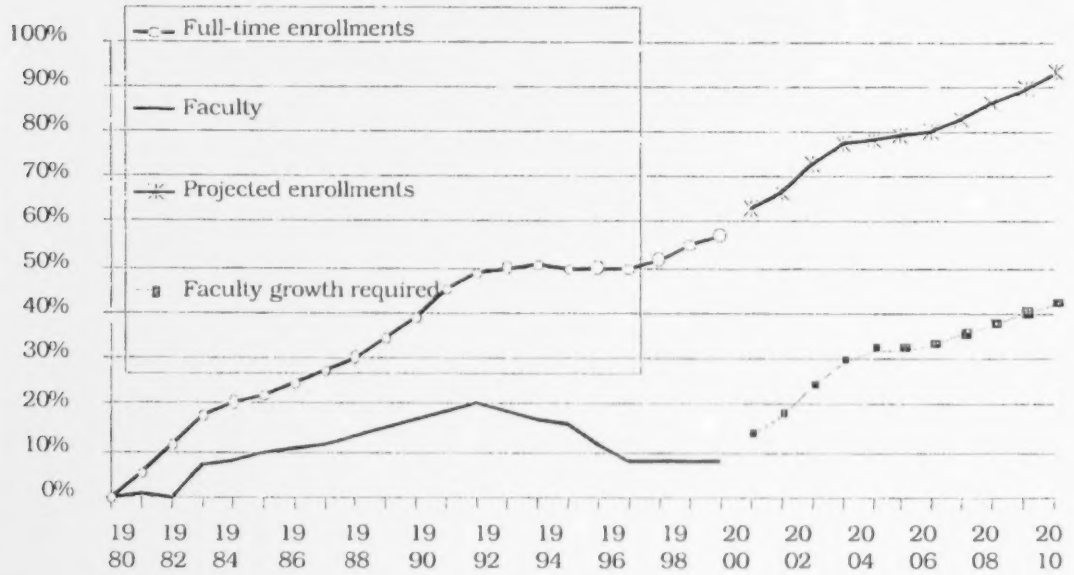
with enrollment growth, over the coming decade, none of that gap will be closed, and the ability of faculty to enhance the quality of their programmes will be jeopardized.

Figure 11. Growing pressure for renewal: Fewer faculty members to support more students

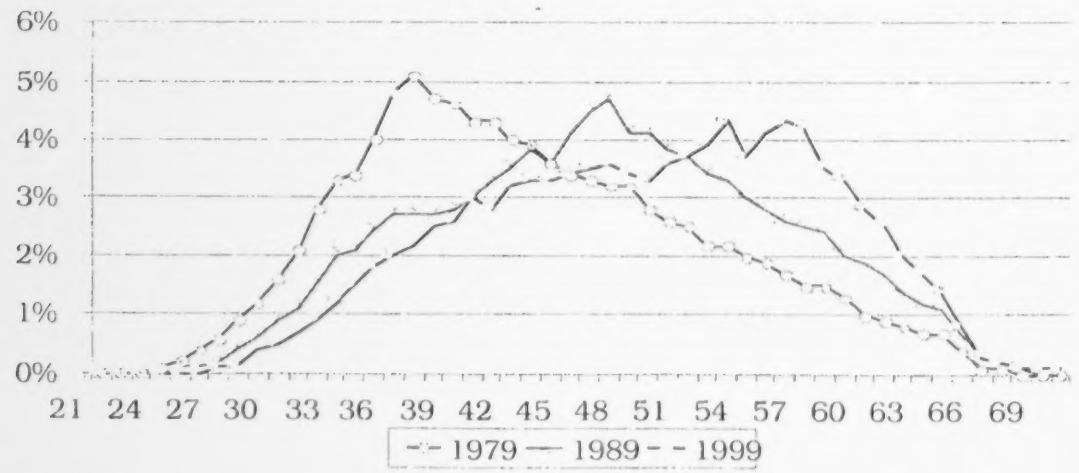


Source: AUCC based on Statistics Canada data.

However, growth is not the only determinant of hiring needs.

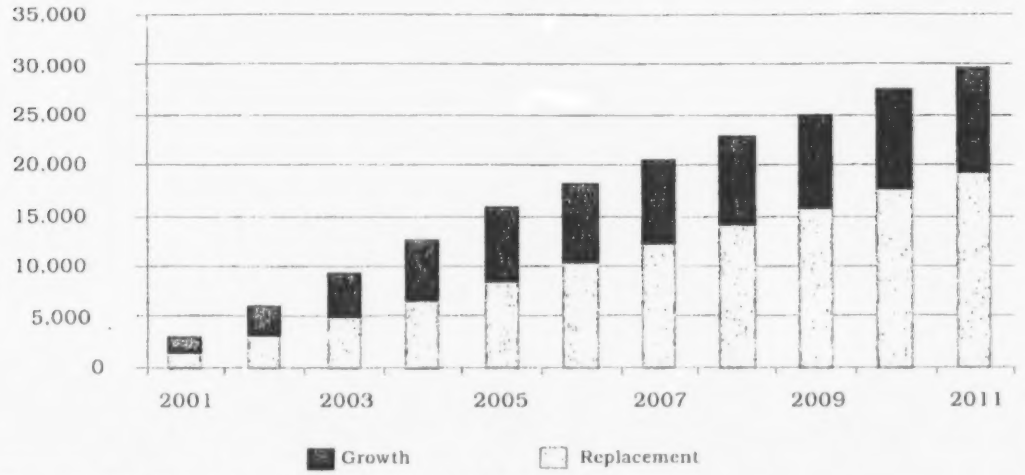
Owing to the age profile of faculty, replacing retiring faculty will also become a growing part of the need to hire over the coming decade (Figure 12).

Figure 12. Movement of the demographic bulge through the system



Source: AUCC based on Statistics Canada data.

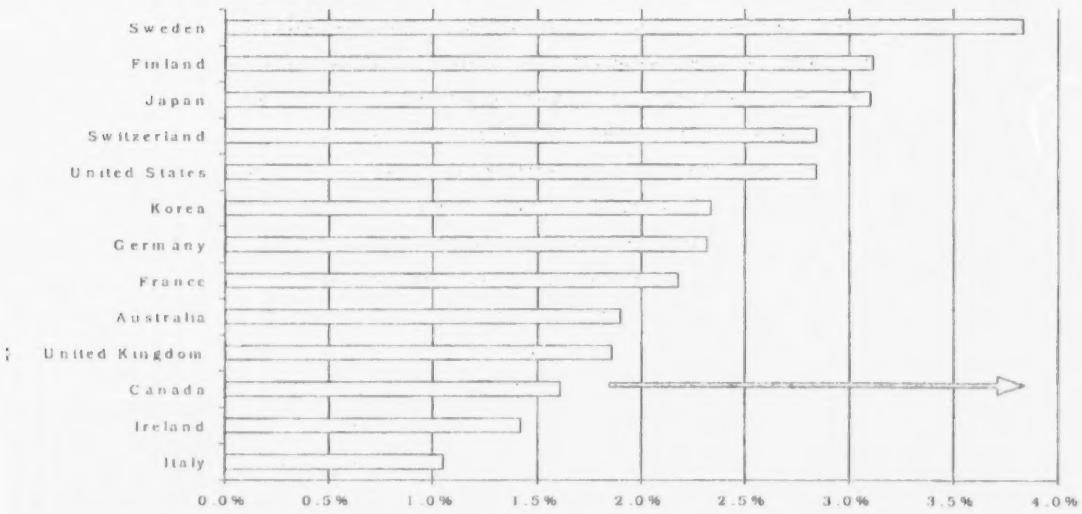
Figure 13. Canada ranks fifteenth among OECD nations, in GERD to GDP ratios



Source: OECD, *Main Science and Technology Indicators*.

Finally, the Federal and many provincial governments have targeted recent investments on research conducted in AUCC universities. In the last few months, the Federal government has articulated a goal to move the relative research performance of Canada from fifteenth to fifth place internationally. According to the projections of AUCC, the realization of this goal would likely require a tripling of the total investments in research and development (R&D) of the nation (see Figure 14).

Figure 14. Need for 30,000 faculty members in Canadian Universities by 2010



Source: Association of Universities and Colleges of Canada.

This R&D goal therefore has major ramifications on the demand for highly qualified personnel, both within academe and in other sectors of the economy. It clearly means becoming more knowledge-based, which would

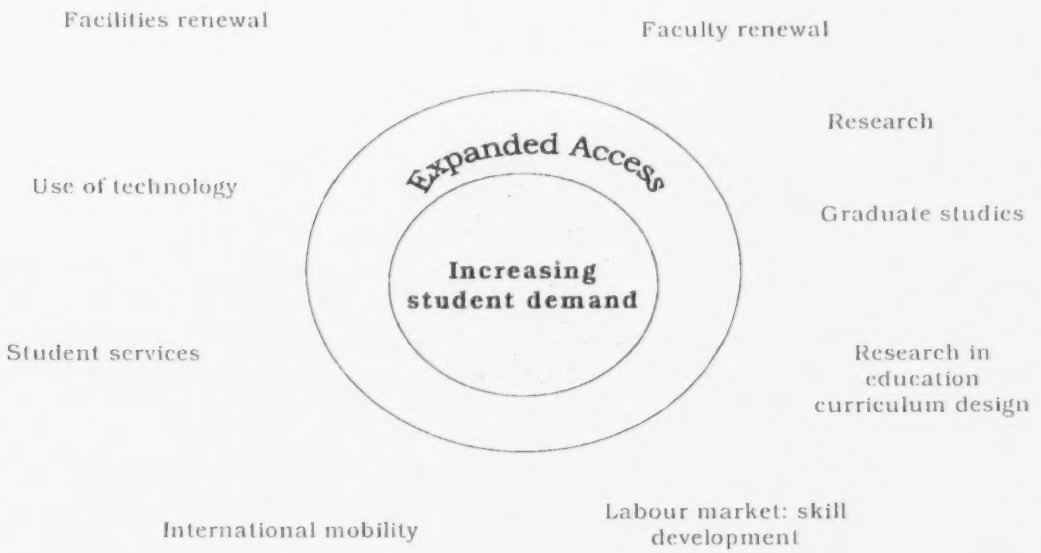
drive up labour market demand for university graduates at an even more rapid pace than dictated by recent labour market trends.

Taken together, these groups of indicators suggest that major changes are on the immediate horizon for Canadian universities. The policy options required to meet these emerging challenges will be many and varied (Figure 15). The challenges and responses to them will likely vary from province to province and institution to institution. The focus in some provinces may be on improving quality, while the need to expand rapidly to meet student demand may cause other provinces to focus their efforts on capacity building measures – both human and physical capacity.

In any event, the benefit of using the indicators in this way has helped focus the policy dialogue around a few key questions:

- How many students and which students should have access to Canadian universities, colleges, trade, and other training institutions?
- What human and physical resources are required to meet the rising demand?
- How can quality be maintained or enhanced as capacity is expanded?
- How can alternative delivery mechanisms be harnessed to achieve the twin goals of improving both access and quality?

Figure 15. Key policy implications



Source: AUCC.

2. FOCUS ON STRATEGIC CHOICES

Thinking strategically involves an attempt to move an agenda forward, often by focusing efforts on a limited number of issues. However, as Guy Neave

(Neave, 2003, in this volume, pp. 63-74) points out, there are risks involved in this approach – not the least of which is short-term gain for long-term pain. For this reason, it is important to use system indicators that look further into the future than the end of the mandate of the current government.

Using indicators in this way will help stimulate the policy discussion and refocus stakeholder interactions on truly strategic goals and priorities. It is not really the indicators that are strategic; rather, it is the policy development and recommendations for change that are strategic. Strategy is or should be both context and time sensitive. What is important today in one education system may not be nearly as important to address ten years from now, nor will all indicators be equally important in all countries. Too strong a focus on a common set of goals and indicators across all higher education systems is likely to lead to problems of conformity as outlined in other studies in this volume.

Being strategic also implies the ability to move an agenda forward. It is difficult to imagine how one would be able to develop a successful strategy to simultaneously advance the complex and lengthy list of goals in the UNESCO recommendations for *Higher Education in the Twenty-First Century: Vision and Action Plan* (UNESCO, 1998). Rather, it is more likely that goals will need to be prioritized and adjusted over time. Quality in higher education is quite subjective, and improvement can always be made. But, improvement and change occur in a step-like fashion. Trade-offs abound. While we would hope to be making constant improvements, the opportunity to make changes will vary.

Once partially addressed, relative priorities shift and new priorities are identified. This situation could well lead to the other major pitfall that Guy Neave highlighted at the outset of his article – an overemphasis on short-term objectives, driven by increasingly foreshortened planning horizons.

Moreover, disciplined by the harsh lessons of prolonged recessions, governments today will only rarely commit themselves to long term spending requirements. While we may not like this fiscal context, it is imperative that we learn to work within it.

3. CONCLUSION

The indicators that have been used are meant to be forward looking so as to focus attention on future system needs. They were designed to stimulate policy development. Process indicators or indicators of the quality of provision have been avoided. Most of those indicators cross over into the realm of institutional rather than system-level indicators.

Diverse institutional reactions to change should be expected and encouraged. The diversity represents a richness from which we can all draw when we are trying to assess what kinds of policies and processes work for our different student clientèles. These are the kinds of indicators that institutions need to use to help identify areas within them that could be

improved or changed, but they are very difficult to generate and interpret at system level.

Indicators, either at the system or institutional/ programme level, must be used with great caution for they seldom provide evidence of cause and effect relationships. They are no substitute for sound reasoning and good judgment. In the end, their primary purpose is to help identify questions rather than to provide all the answers.

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XV. An Australian Perspective on System-Level Strategic Performance Indicators for Higher Education

MARTIN HAYDEN

1. INTRODUCTION

This study addresses three matters in addition to providing a overview of the Australian Higher Education system: *(i)* It reports on the nature of system-level performance indicators in Australian higher education. *(ii)* It offers a view on their current status and reports on issues related to their design and use. *(iii)* It offers a personal perspective on the UNESCO project and on the potential for an Australian contribution to its implementation.

Being necessarily brief, this study cannot possibly do justice to the wealth of detailed information and commentary that exists about system-level performance indicators in Australian higher education. The publications and data sources cited in the paper represent the most significant contributions to date, but, no doubt, further data could be made available.

2. AUSTRALIA AND THE AUSTRALIAN HIGHER EDUCATION SYSTEM: AN OVERVIEW

Australia is an island continent stretching 3,180 kilometers from North to South and 4,000 kilometers from West to East. It is a relatively arid continent, with 80 percent of its landmass receiving a median rainfall of less than 600 mm per year, and it has a wide range of climatic zones: tropical regions to the North, arid expanses in the interior, and temperate regions to the South. Its population, which in June 1999 was just under 19 million, is concentrated heavily in the major cities of Sydney, Melbourne, and Brisbane, and along the eastern coastal fringe of the continent. Its economy is robust and the standard of living enjoyed by most Australians compares favourably with that of other industrialized economies.

It has a federal system of government within which there are three levels: Commonwealth, state, and local. At Federation, in 1901, the governments of the six Australian states assumed major responsibilities for education. While this situation remains, the Commonwealth government has become increasingly important as a funding source, especially for universities.

There are thirty-seven publicly funded and two private universities in Australia. These institutions range in size from approximately 41,000 students (Monash University, near Melbourne) to approximately 2,500

students (University of the Sunshine Coast, located just north of Brisbane). The total student population is approximately 680,000.

In aggregate, Australian universities offer programmes of study across all fields found in universities in industrialized countries. Most students (78 percent) are enrolled in undergraduate programmes. These programmes, typically of three or four years in duration, include foundation programmes in the sciences, business, and the humanities, as well as professional programmes in fields as varied as medicine, engineering, psychology, law, nursing, and education. The proportion of students (22 percent) enrolled in postgraduate programmes is steadily increasing. These students are enrolled in postgraduate Diploma, Master's Degree, and Doctoral programmes.

Most students (59 percent) study full-time, especially at the undergraduate level. A substantial proportion (27 percent) of students study part-time, and a smaller but growing proportion (14 percent) of students are enrolled externally, that is, they do not participate in on-campus studies.

State governments established almost all of the universities of Australia and gave each a mandate enacted by the relevant state parliament. The states have long ceased to be the source of funding for Australian universities, however, and the Commonwealth government is now the principal funding source, providing 68 percent of their income in 1999. Other sources include student fees and charges, research grants, income from investments, income from the state governments, and income from donations and bequests. As much as one-third of the Commonwealth government income is received through the Higher Education Contribution Scheme (HECS) of the Commonwealth government. Under this Scheme, students who have a Commonwealth-funded place must make a contribution (estimated at one-third) to the cost of their studies. They do this either by making an up-front payment or by deferring payment (plus accumulated interest) until their income reaches a certain level, at which point they repay the Commonwealth through the income tax system. Because overseas students do not have access to Commonwealth-funded places, they do not pay into HECS and instead must pay full fees.

Successive Commonwealth governments have sought to contain the public cost of universities, either by charging more to students through HECS or by encouraging universities themselves to obtain more of their funding from non-governmental sources. Not surprisingly, funding is one of the most important current concerns of Australian universities. Through the Australian Vice-Chancellors' Committee, universities are seeking to persuade the Australian public that increased public funding for higher education is necessary for them to maintain international standards and to retain their high reputation for teaching and research.

Australians have high levels of participation in post-school education and training. About one-quarter of all Australians hold a post-school qualification. Recent OECD (1998) figures indicate that Australia ranked

third, after Canada and the United States for tertiary level participation among those aged 17 to 34, and seventh, after Spain, Finland, the Netherlands, the United States, Canada, and Denmark, for university-level participation.

3. STATEMENT OF PURPOSE OF THE AUSTRALIAN HIGHER EDUCATION SYSTEM

The principal purposes of Australian universities (Higher Education Council, 1992, pp. 12-13) are:

- the education of appropriately qualified Australians to enable them to take ...leadership role[s] in the intellectual, cultural, economic, and social development of the nation and all its regions;
- the creation and advancement of knowledge;
- the application of knowledge and discoveries to the betterment of communities in Australia and overseas.

Australian universities, wherever their location and whatever their selected profile, must enable their graduates to operate anywhere and in any sphere at a level of "professionalism" consistent with best international practice, and in ways that embody the highest ethical standards.

4. THE GOALS OF THE AUSTRALIAN HIGHER EDUCATION SYSTEM

The aggregated goals of the system are, accordingly, to serve the community by:

- retaining and nourishing its own diversity to meet the needs of a nation that is characterized by its geographical, social, and cultural variety;
- encouraging further diversity so that all courses reflect the regional, social, and cultural differences that impinge on the individual universities;
- providing a range of opportunities for access to higher education by members of disadvantaged groups;
- ensuring high quality programmes of teaching and supervision;
- ensuring that graduates of Australian universities are enabled to operate anywhere in Australia or overseas at standards consistent with best practice;
- ensuring that their students are encouraged to achieve beyond their own expectations;
- providing an intellectual climate within the institutions that encourages the questioning of currently accepted knowledge and modes of inquiry, its foundations, and its presuppositions;
- achieving scholarly depth and perspective in matters relating to society, technology, and culture;
- advancing knowledge through research that is, at its best, the equal of any that is conducted in higher education systems elsewhere;

- collaborating with other teaching and research sectors, such as schools, TAFE,* and government research agencies, and with industry, to ensure the most effective use of resources;
- applying the outcomes of research and scholarship in ways that contribute to the economic, social, and cultural development of Australia, its states and regions, and its place in the world;
- engaging actively with the professions and in the continuing education of practitioners;
- keeping the wider community abreast of developments in their selected areas through participation in community debates;
- engaging with the community generally, as educator and as social and cultural critic at local and national levels, according to the capacities of the individual institutions;
- providing the Australian community generally, but students and staff in particular, with access to the most recent advances in knowledge, and its application, through relevant international networks complementing those of the individual institutions.

5. STRATEGIC SYSTEM-LEVEL PERFORMANCE INDICATORS IN AUSTRALIA

There has been sustained interest in performance indicators for higher education in Australia since about the mid-1980s. The development of indicators since then has been striking. They now form an important basis for monitoring both the performance of the Australian higher education system and the performance of its constituent institutions. Their importance to date as a basis for Commonwealth government funding allocations has, however, been restricted.

While there are numerous references to performance indicators in documents on Australian higher education written prior to the mid-1980s, the first significant step towards their coordinated identification and development was taken in 1984, when the Commonwealth Tertiary Education Commission funded a study group to investigate ways of measuring quality and efficiency in Australian higher education (Linke *et al.*, 1984). The group pointed to a range of possible performance indicators for the higher education system, but its conclusions were cautious. In particular, it expressed concern that system-level indicators might be "insensitive to local or circumstantial conditions" when applied to individual institutions (Linke *et al.*, 1984, p. iv). The implied reason for caution was, at least in part, the distinction between quantitative and qualitative performance indicators.

The Commission pursued the matter. In a report to the Commonwealth government in 1986, it strongly supported moves to improve the range and

* Technical And Further Education (TAFE) Queensland is the largest provider of post-secondary education in Queensland, Australia.

availability of statistical information on higher education in Australia, and it encouraged the development of performance indicators. It again expressed caution. In its view, the overarching goals for the system had not been agreed upon, and the management information system available at the time was considered to be inadequate to the task of yielding an assessment of the achievements of the system (Hudson, 1986, pp. 268-270).

In 1988, the Commonwealth government announced its intention to develop performance indicators that would permit measurement of the achievement of explicit strategic goals for higher education. The Minister stated that

> The range of indicators to be developed should cover such issues as student demand and course completion rates, quality of teaching and curriculum design, relative staffing provision and measures of academic staff performance in various aspects of research, publication, consulting, and other professional services. Indicators of performance against equity goals and measures of organizational efficiency should also be included in this process (Dawkins, 1988, p. 86).

These specifications laid the groundwork for subsequent developments.

In 1989, the Commonwealth government commissioned a research group to develop performance indicators for the system. Twenty-seven generic indicators were developed, including indicators of institutional context, teaching and learning, research and professional services, and participation and social equity (Linke, 1991). The work of this group was invaluable for the integrated nature of the set of indicators produced and for the originality of some individual indicators. The focus of the work undertaken by the group, however, was upon developing indicators that would be of primary value to individual institutions. Indeed, the group recommended that the indicators

> be used by institutions as a basis for setting appropriate achievement targets – taking account of the range in performance of comparable institutions across the system as a whole – in accordance with their particular goals, resources, and other local circumstances (Linke, 1991, p. 134).

Little emphasis was placed on the potential usefulness of the indicators as a basis for monitoring system-level performance.

In 1990, the Commonwealth government introduced for the first time a performance-based scheme for allocating funds to higher education, having foreshadowed this possibility in 1988 (Dawkins, 1988, p. 86). The scheme that was introduced confined itself to the funding of research infrastructure, however, and it did not include the range of indicators articulated earlier by the government. It required universities to compete for a share of funds (approximately 5 percent) that were held back from the

total operating grant to universities. The basis of this competition was institutional performance on an index of income obtained from national competitive research grants.

The scheme remained in place throughout the 1990s, with modifications made in 1995 to broaden the index to include indicators of research outputs. In 2002, it will be replaced by a new performance-based scheme for funding both research infrastructure and the training of higher degree research students. As a consequence of these changes, up to 15 percent of public funding for Australian universities will eventually be performance-based. Of particular note is the focus upon performance indicators.

Over the period from 1993 to 1995, an extensive quality review process was introduced into Australian higher education. Curiously, the audit process initiated and funded by the Commonwealth government did not require systematic use of quantitative performance-related indicators. As a result, universities produced individualistic quality portfolios based upon their particular interpretations of quality as reflected within their institutions. Portfolios varied considerably in their assignment of values to performance indicators. The modest financial allocations made by the government in recognition of quality assurance measures encouraged most universities to develop their management information systems and their skill in using performance indicators.

In 1996, the Commonwealth government signaled that quantitative performance indicators would, when possible, provide the basis for future quality appraisals of higher education. Both the Department of Education, Training, and Youth Affairs (DETYA) of the Commonwealth government and principal advisory body of the government on higher education, the Higher Education Council, were directed to develop both institution-specific and system-level performance indicators for Australian higher education. Publications that reflect the renewal of government commitment to the importance of quantitative indicators include *Equality, Diversity, and Excellence: Advancing the National Higher Education Equity Framework* (Higher Education Council, 1996), *The Characteristics and Performance of Higher Education Institutions* (DETYA, 1998), *Equity in Higher Education* (DETYA, 1999a), and *The Quality of Australian Higher Education* (DETYA, 1999b: 1-22).

To summarize, the Commonwealth government has succeeded in generating a large and diverse range of quantitative performance indicators for higher education in Australia. However, system-level indicators have not been developed to the same extent as institution-specific indicators. The reasons for this feature of the Australian experience are now addressed.

6. THE CURRENT STATUS OF STRATEGIC SYSTEM-LEVEL PERFORMANCE INDICATORS IN AUSTRALIAN HIGHER EDUCATION AND THE PROBLEMS OCCURRING IN THEIR DESIGN AND USE

The current strategic priorities of the Commonwealth government for post-school education and training (including higher education) are to expand opportunities, assure quality, improve the responsiveness of institutions to varying student needs and industry requirements, advance the knowledge base and university contributions to national innovation, and ensure public accountability for the cost-effective use of public resources (DETYA, 2000, p. 35). Applied to higher education, achievements as per these priorities are measured by means of indicators that include "access to higher education", "participation of the population in higher education", "higher education completion, retention and progress", "destinations of higher education graduates" and "unemployment experience of higher education graduates". In addition, the government monitors the financial health of the higher education system by means of indicators of income from all sources, expenditure for all purposes, and institutional liquidity positions.

The list of system-level indicators is, however, limited. In particular, the quality of the performance of the system in discharging its core responsibilities of teaching and research is not comprehensively monitored. The issues surrounding appraisal of the quality of a higher education system and of its constituent elements were comprehensively documented in a report entitled *Achieving Quality*, which was published by the Higher Education Council in 1992. In short, the problem is one of measurement, referred to as

> the measurability of the attributes of quality, the problem of discriminating between change and improvement, and the difficulty of establishing which factors improve or impair the quality of outcomes (Higher Education Council, 1992, p. 72).

In 1992, the Council documented a comprehensive statement of the purposes and goals of the Australian higher education system (Higher Education Council, 1992, pp. 12-13; *v.* Appendix B). In 1998, it embarked upon the establishment of relevant indicators (Higher Education Council, 1998, p. 315). This project did not reach fruition, however, largely because of difficulties of measurement. The goal of "ensuring high quality programmes of teaching and supervision", for example, requires not only input from recent graduates, as is currently obtained in Australia by means of the Course Experience Questionnaire instrument (Ainley and Johnson, 2000), but also input in the form of judgments by discipline-based peers. These different inputs are extremely difficult to integrate and to report in the form of a strategic indicator, and the process is very costly.

There is, in addition, a view in Australia that "quality" is best measured in the context of the mission and circumstances of individual institutions. Linke, for example, referred to the fact that system-level indicators can be

"insensitive to local or circumstantial conditions" (Linke *et al.*, 1984, p. iv). The Australian Committee of Vice-Chancellors stated that:

> the validity of the use of performance indicators depends on their being judged in the context of the special mission and role of the particular university concerned... they provide no basis for comparative analysis (quoted, *in*, Higher Education Council, 1992, p. 72).

Whether as a consequence of this view or not, the thrust of much of the collection and analysis of performance-related data in Australia is undertaken for the purposes of producing indicators for the level of the given institution, rather that at the level of the system (*e.g.*, DETYA, 1998).

One factor that offsets to some degree the lower level of emphasis placed upon the development of system-level indicators in Australia is the relative strength of other forms of monitoring of the performance of the system. The Commonwealth government has the capacity to draw upon technical expertise and submissions from a range of community interests, either to review the system as a whole (*e.g.*, West, 1998) or to review particular aspects of the performance of the system. The government does not, therefore, wholly rely on quantitative system-level indicators of performance when seeking to monitor the performance of the system. Through its Evaluations and Investigations Programme, for example, it routinely commissions investigations of performance in areas of higher education that are not amenable to exploration by means of standard quantitative indicators. Examples include investigations of undergraduate and postgraduate teaching practices, flexible course delivery practices, quality management practices, the costs of different learning technologies, the commercialization of new knowledge, and ways of consolidating productive partnerships between higher education and industry.

As reported earlier, performance-based funding is employed in a limited way by the Commonwealth government to allocate funds to individual universities for research infrastructure costs. In 2002, the scale of performance-based funding will increase substantially as the availability of funds for individual universities for the training of research higher degree students also becomes subject to performance in regard to particular indicators (research degree completions, research income, and research publications). The extent of reliance upon performance indicators in the research area sits oddly with the more general approach of the government to the funding of higher education, which is characterized by marginal adjustments to institutional grants based upon annual negotiations about forward student load. A review, funded by the Higher Education Council, of performance-based funding in the research area was far from encouraging. It reported that the mechanism introduced in 1990 "is contributing to a frenetic chasing of grants and publications which, in addition to its unintended effects on the quality of teaching and learning, must also militate against more reflective scholarship and the desires of academics to keep abreast of broad developments in their disciplines" (Anderson *et al.*,

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1996, pp. 63-64). Although this situation has been widely recognized, it has not been addressed by the government to date.

7. UNESCO AND AUSTRALIAN COLLABORATION

The UNESCO *World Declaration on Higher Education* expresses a global vision for higher education. In seeking to monitor implementation of this vision in Member States, UNESCO requires a "quantitative, solid system of fact reporting" (from the "Project Outline" on Strategic Indicators for the Twenty-First Century). In a study intended to develop the issues, Abercromby and Fielden (2001) recommend various self-challenge questions and quantitative indicators that might be adopted by country-based higher education systems to monitor and to evaluate performance against the UNESCO vision. Their recommendations raise a number of considerations that are now addressed from an Australian perspective.

The first point is that the Australian database on higher education is sufficiently well developed to be able to provide information related to most of the quantitative system-level indicators identified in the study by Abercromby and Fielden. Details related to student participation, staffing, expenditure, research and development, foreign students, the lifetime expectations of students graduating from higher education, and so on, are, for example, readily available from either the Department of Education, Training, and Youth Affairs, or from the Australian Bureau of Statistics. Some of the other proposed indicators, such as "gender inequalities in curricula and research", are not so easily identified within existing data, suggesting that their meaning is, at the very least, in need of clarification.

The second point is that the interpretation of each of the four *World Declaration* objectives referred to by Abercromby and Fielden (p. 8) is open to considerable differentiation from country to country – owing to the glaring contrasts internationally in the settings for higher education. This situation makes the task of articulating standard strategic indicators exceptionally challenging. In the case of Australia, for example, concern with the *World Declaration* objective of "promotion of access on merit" will require that attention be given to improving the success and retention rates of indigenous students in higher education. Yet a strategic indicator that is relevant to this imperative may be far too specific for application in other countries. It follows that the global vision for higher education of UNESCO may need to be contextualized within Member States as part of the process of its implementation. UNESCO might permit Member States to develop relevant proposals for how they will meet, and then indicate overall success in meeting, the policy objectives of UNESCO.

The third point is that several of the self-challenge questions identified by Abercromby and Fielden (2001: 14-16) cannot be appropriately addressed by quantitative system-level indicators. For these questions, qualitative data and understanding are necessary. In Australia, the Commonwealth government, through its Evaluations and Investigations Programme, referred to above, commission a considerable number of

qualitatively based evaluations and investigations of system-level performance each year. For the UNESCO vision to be realized, quantitative measures and indicators, along with agreed upon qualitative investigations, need to be enunciated and harmonized.

A final consideration is that any compilation of standard quantitative system-level indicators for application internationally will need at least initially to be restricted in number and scope. The difficulty in obtaining agreed upon operational definitions for strategic indicators across separately funded systems of higher education is potentially great. The best available model for the task is the OECD publication, *Education at a Glance* (2001), which provides information primarily on the demographic and financial aspects of education across a large number of countries – but this model tends to understate the importance of the core functions of teaching and research in higher education.

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PART FOUR

CONCLUSIONS

XVI. The Past and Future of Quantitative Indicators for Higher Education

KLAUS HÜFNER

1. INTRODUCTION

Having looked at the results of the World Conference on Higher Education of 1998, thereby having focused on the *Framework for Priority Action for Change and Development of Higher Education* (the *Priority Action Plan*) (UNESCO, 1998b), the first issue to be dealt with will consist of three questions:

i) How many levels must be taken into account?
ii) What are the specific methodological demands for the construction of indicators?
iii) What level-specific indicators should be constructed for what purpose?

These questions are closely interrelated. It would be difficult to deal with them step by step, because they would lead to the question of whether or not it would be possible to construct a meaningful set of indicators without an implicit theoretical framework (which, in turn, has some political implications). In this context, it might be useful to identify the approaches/models that have been used so far in order to classify higher education systems. The case of the German higher education system is briefly described so as to reveal some of the difficulties of constructing indicators for a higher education system "in transition".

2. BACKGROUND AND TASKS AHEAD

When the UNESCO World Conference on Higher Education adopted its *Framework for Priority Action for Change and Development of Higher Education* in early October 1998 (1998b), the document included a huge list of demands related to the main directions of reform and their governing principles. This set of demands, in turn, implied a conceptual framework as expressed in the seventeen articles laid down in *Higher Education in the Twenty-First Century: Vision and Action* (UNESCO, 1998a).

Having studied the two UNESCO documents, as well as the papers prepared for the meeting, the following picture emerges.

The *Framework for Priority Action* is directed at three levels of priority action, at *(i)* the national level, *(ii)* the level of systems and institutions, and *(iii)* the international (UNESCO) level. If one orders these levels vertically, one starts with the higher education institutions. Then one moves up to the (national) system level, perhaps introducing a regional level, as will become

more and more necessary in Europe (either the European Union and/or the European Higher Education Area). Finally, one reaches the global (UNESCO) level.

The Project outline stresses that "while the main responsibility for the process of implementation remains with respective Member States and their higher education institutions, UNESCO, in co-operation with other organizations and partners, is expected to follow up the developments and monitor the implementation" of the vision of higher education as presented in the two UNESCO documents cited above.

Since UNESCO is a world organization with 188 Member States and 4 associated members, but has at the same time regionally decentralized offices and institutes/centers, such as, for example, UNESCO-CEPES, it can be assumed that UNESCO is in charge of both, the intra- as well as the inter-regional task of monitoring.

The usefulness of UNESCO monitoring might be questioned, because the two above-cited documents are neither obligatory, as in the case of conventions ratified by Member States, which also include optional protocols related to individual complaint procedures, nor do they include any timetables which indicate which goals should be reached in which year. Nevertheless, monitoring can become an effective tool when used in a comparative way, thus indicating which country has reached what level of implementation concerning the fulfillment of a specific goal. Performance ranking tables, for example, can be easily read. They do not need further detailed explanation – in short, they represent a reduction of systemic complexity leading to vivid debates on higher education policy, especially in those countries ranking at the bottom. If the tables that are constructed are based upon the huge store of data available and published by UNESCO without larger time lags, UNESCO can play a major role in higher education policy-making.

- As the participants in the Hiroshima Roundtable came from two different "sides", from the institutional/national "side" and from the regional/international "side", looking either "upward" or "downward", it will be interesting to see how their different "views" can be reconciled or even merged, because the issue of the information aggregation level might cause many problems.

Moving up the aggregation of the information level automatically implies that information will be destroyed. On the other hand, the more disaggregation occurs, the more information will be created. Indicators to be developed and statistically applied at the regional/international level will most probably be rather "crude" measures, in fact, "proxies" for the description of social realities. The selection of the number of indicators to be chosen therefore deserves special caution. Which are the best indicators for describing the performance of national higher education systems?

In addition, another question must be raised, that of the need to construct a new set of indicators which actually represent the

regional/global level – that, in other words, represent the stage/degree of globalization of higher education systems? One should think, for example, of input-output matrices of student and teacher mobility or even of "course" mobility, which will not only indicate which countries are "net" importers or exporters of higher education, but will also offer information about the "density" of the globalization reached, as well as about its directions, thereby also stimulating the undertaking of corresponding studies at regional level.

Looking now at the national level as well as at the level of systems and institutions, one can differentiate between "externally" – and "internally" – oriented sets of indicators. In the first case, information is collected for international comparison. The information demand side consists of international organizations, for instance UNESCO, asking for such data for purposes of international comparisons. Most probably, most of the data will come from "internal" national data sets, some of which will have to be "re-analyzed", and some of which will have to be collected through new enquiries and/or samples.

Looking into the UNESCO document, one can find data requirements that are most probably available in many countries, such as, for example, indicators for

- women's participation at all levels in all disciplines;
- national and international mobility of teaching staff and students;
- low enrollment in higher education as per internationally accepted comparative standards.

Other demands require specific research and agreements on how to define "proxies" and to measure them, such as, for example:

- the exercise of academic freedom and institutional autonomy;
- the use of multi- and trans-disciplinary approaches in teaching and research;
- the recommendations and the new goals for (higher) education as set out in the 1996 report to UNESCO of the Delors–Commission, related to its four stated goals: "to learn to learn", "to learn to do", "to learn to live together", and "to learn for life";
- accountability and both internal and external evaluation;
- employability of graduates, not only as job-seekers, but also as job creators;
- the use of new technologies in higher education;
- the openness of higher education to adult learners.

Admitting that this list is not comprehensive, the necessity of undertaking a full in-depth analysis of the two UNESCO lists remains a priority. Moreover, and here we return to the second question of the three questions cited at the start: What are the specific methodological demands for the construction of indicators? In this connection, the technical questions of empirical-statistical evidence as well as of the use and applicability of statistical methods are of secondary order. Putting the

matter more bluntly, the question is whether there is not a need for a theory or at least a model or taxonomy in order to start the work.

What follows will offer some insights into how the problem was approached in the past. A new theoretical breakthrough will still remain to be undertaken.

3. STATE *VERSUS* MARKET SYSTEMS - THE DEAD HAND OF THE PAST?

Models existed and were used in the past in order to classify and to locate national higher education systems. Some of the implications of these models for higher education policy are discussed below.

3.1. Three Categories for Locating Higher Education Systems

Looking upon the ideal-type models of a continuum which links the two extremes of a central planning system, on the one hand, and a perfect market system, on the other, higher education systems could be placed – at least until the end of the Cold War – into three broad categories:

- at the one extreme, the relatively highly centralized higher education systems of the former socialist industrialized countries, which were supposed to function as integral parts of centrally planned national economies, thus satisfying the necessary requirement for skilled manpower for their economies;
- at the other extreme, decentralized higher education systems, *e.g.*, in Canada and the United States, operating within the context and under the rules of "free market economies", in which higher education institutions resembled, as Martin Trow once put it, "the birth and death of small businesses in modern economies, and the patterns of success and failure of small capitalist entrepreneurs" (Trow, 1996);
- the countries of Western Europe to be placed somewhere in-between, depending upon the relationships between publicly financed higher education systems and varying degrees of centralization/ decentralization – which is much more difficult to locate exactly in the continuum mentioned above than the two other categories.

This third category, which nowadays also includes the countries in transition and many countries of the South, is the most interesting one, because the countries concerned are confronted with the issue of "deregulating" higher education systems in the context of increasing globalization in economic, technological, and cultural terms.

Now, what does "deregulation" actually imply? Is there an "optional mix" between bureaucratic and market co-ordination mechanisms possible in order to avoid "state failure" as well "market failure"? Since "the market and the bureaucracy are not gin and tonic that can be mixed in any proportion wanted", as Janos Kornai (1992) once put it, we have to identify desirable patterns in which higher education systems can operate better than in the past.

In economics, we learn that the model of perfect competition demands the fulfillment of a number of conditions to be met in order to guarantee an optimal allocation of resources. Among them, there should be many participants on both sides of the market, on the demand as well as the supply side. Furthermore, the axioms of full market transparency and of economic rationality must be guaranteed.

Everybody knows that reality looks different even if a trend towards the better use of market forces in higher education can be observed in most countries around the globe.

In the past, as best reflected in the OECD literature in the 1960s through the 1980s, three higher education approaches dominated the relationship between governments and national systems of higher education.

First of all, the manpower (forecasting) approach, which has been used as an educational programming technique, linked all the sectors of economic, social, and educational activities. The education sector, including higher education, was treated as a sub-system of central state planning which produced the necessary qualified labour required for the economy. A rather rigid relationship between the outputs of higher education systems and the necessary inputs for the economy were assumed. Of course, prices were also used within this programming technique, but their value as signals ("economic levers") was part of the overall planning context and not a substitute for it.

The manpower approach has also been used in a number of OECD countries; however, the most important difference has been the fact that in those market economies its use has been primarily an "academic exercise". The political decision-makers were free to use it as an information base for decisions concerning higher education systems, thus either supporting the expansion or the contraction of certain higher education sectors, faculties, and course programmes in the light of anticipated, possible future requirements of the labour market. But the relationships remained extremely loose, because the labour markets, being much more flexible, followed a different set of rules.

At the other end of the continuum, the rate-of-return approach has been used, thereby implicitly claiming that educational programming should proceed on the basis of – individual and social – cost-benefit analyses in which the direction of price signals are of importance for educational policy – decisions. This approach, that has also been used in order to identify any labour market imperfections, is based on the assumption of a free and highly flexible higher education market, which functions as an automatic resource allocation mechanism. Here, the role of buyers (enrolled students in higher education institutions) regarding the character and quality of the product is strengthened, as is, indeed, the very character of the producer, namely the individual higher education institution.

In this model, the notion of "planning" is only related to the institutional level and primarily implies the management of institutional problems in a

competitive higher education market system. For this reason, the competing producers are extremely active in producing and publishing a wealth of information concerning the performance of their institutions, and research on higher education plays a much more important, strategic function so as to meet the challenges of the higher education market in order to "survive".

Needless to say, the information needs and applied strategies of these two extreme models vary tremendously – both at institutional and at system levels.

Turning to the third group of countries, their higher education systems are somewhere in-between the two extremes. During the 1990s, most of them decided to move towards the ideal type of "neo-classical world", but their situations are still rather confusing. Regardless of the angle from which one views these systems, both are, internally and externally, in situations of dramatic mutation to be characterized by conflicting forces of dynamic change *versus* conservative stability/stagnation. Higher education system change might take ten years or even longer. No matter whether the systems are "Byzantine versions of the market" or "Byzantine versions of a state" (Meyer, 1983), the most difficult problem to be solved here is the issue of identifying indicators during this process of transition during which the roles of neither the state nor the market are clearly defined.

In the past, during periods of expansion and no major restraints, the so-called social demand approach dominated in order to identify a possible over- or under-supply of student places by relating anticipated or politically desired (or even fixed) outputs of the higher education system ("social demand") with the supply side of the higher education market. Depending upon the inflexibility of the adaptation processes of the state-controlled higher education systems, the individual as well as societal risks of educational mis-investments were rather high.

3.2. Burton Clark's Triangle

Another analytical approach, which relates in interesting ways to those in charge of applying one of the three programming techniques, has been Burton Clark's famous triangle (Clark, 1983). In his analysis, he identified three major forces that influence the operation of higher education systems, namely the state authority, the academic oligarchy, and the market. In his "magic triangle" – where these three forces are angles indicating ideal characteristics of higher education types – the connection lines offer three dimensions:

- Dimension I: the state authority model *versus* the academic oligarchy model;
- Dimension II: the state authority model *versus* the market model;
- Dimension III: the academic oligarchy model *versus* the market model.

Each of these three dimensions can be discussed as a continuum between two ideal-type systems in order to locate national higher education systems within this triangle.

Dimension II relates to coordination problems between the state and the higher education system within alternative planning set-ups (which were dealt with above intensively). More "market" and less "state" as a demand of educational policy has been discussed in the economic literature by looking at the continuum between the "Leontief* world" of central planning systems, to be found in the former socialist industrialized countries, and the "neoclassical world", with its model of perfect competition, which served in part as an orientation function for higher education systems, for example, in the United States and Canada.

3.3. The Higher Education System of Germany – "Neither - Nor"

Without doubt, the higher education system of Germany can still be placed firmly between the state authority and the academic oligarchy (Dimension I). Legal authority and regulations are firmly in the hands of the *Länder*, whereas – in particular, with regard to research in which academic freedom is the rule – the German system stands very close to the academic vertex. There are surprisingly few or no market forces operating in the system.

Moreover, the German higher education system is remarkably resistant to change, partly owing to the lack of institutional autonomy, with deans and presidents serving as *primus inter pares* and lacking the power of chief executives. Although the demands of increasing competitiveness, of internationalization, of the introduction of the BSc and MA degrees, thus replacing the *Diplom* Degree, and of credit-point systems are slowly being implemented, no one knows what the system will look like in the future. For the time being, the German higher education system looks more "Byzantine" than ever before, because it is a "system in transition", which, for the time being, cannot be properly described by a consistent set of indicators.

Almost all political parties in Germany clearly and often express goals for higher education reform, yet the goals are not put into effect in terms of a new policy which would embrace key elements within a consistent higher education market model.

Those goals are:

- competitiveness both among national higher education institutions as well as among international ones, whereby the territory of fifteen European Union member states plays an important role;
- accountability and transparency, thus implying the use of a full set of performance indicators;

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* Economist Wassily Leontief (1906-1999) won the Nobel Prize in 1973 for his production analyses showing how changes in one sector of the economy can affect others.

- internal efficiency as well as effectiveness with regard to the needs of the labour market;
- the highest possible level of quality output, both in terms of graduates and of research results.

However, problems arise as soon as these goals are to be translated into an applicable reform model of higher education, which then necessarily has to be based upon a market-oriented model. Resistance comes from all circles because the implementation of such a model necessarily demands radical changes for all parties/stakeholders involved and engaged in higher education.

Such a market model would imply "consumer sovereignty" on the student demand side, but, at the same time, a price for the services offered in terms of tuition fees. It would also imply producer sovereignty in terms of differentiation and specialization of services at different institutions. Performance would be evaluated according to market-oriented decision-rules, and better performance would lead to higher income. The role of the State administration would change dramatically: instead of regulating all kinds of details down to the faculty and chair level through highly time-consuming administrative procedures, it would be primarily in charge of *(i)* framework legislation, *(ii)* direct – or better – indirect quality control through accreditation mechanisms, and *(iii)* arrangements for basic funding.

Since there is no general agreement among the major political decision-makers in Germany, the "Byzantine" nature of German higher education will create new Byzantinisms during its transition period.

On the one hand, a hot debate is taking place regarding the introduction of student fees. The main feature of these debates is a typical German one concentrating on and distinguishing between the two extremes of 100 percent *pro* or *contra*, thereby ignoring the whole stratum of possible solutions between the two extreme positions. The main reason is the lack of a consistent model of higher education reform, which would take both sides into account, namely, demand for and supply of higher education. Typically is the present legal requirement found in the 1976 Higher Education Framework Act *(Hochschulrahmengesetz)* that teaching performance should be *(i)* evaluated by students and *(ii)* lead to a differentiated scheme of payments for professors. According to basic economics, this kind of performance differentiation on the supply side of the market can only function in an effective way if both sides, students and teachers, are financially involved in the demand for and supply of teaching services. It would be unrealistic to assume that students can and will offer objective evaluations of the teaching performances of professors as long as they do not have to pay for these services.

As in all higher education systems in which schemes of tuition fees exist, they must be closely linked to a functioning system of stipends (loans and/or grants). Secondly, the repayment conditions must be clearly defined, for example, through an academic fund model along the lines of the Australian model introduced in 1989, which requires repayment based

upon the future income of graduates. Thirdly, the income from tuition fees must be retained by the individual higher education institutions and should not lead to a reduction of the present level of public financial support.

Two examples may illustrate the present situation in German higher education. The first one is related to the decision-rules of a market system. When higher education institutions introduced limited incentive schemes in order to improve performance, some faculties received extra money because of higher numbers of graduates and higher numbers of dissertations per teacher, more publications, etc. The implied decision rule would have been that the more active teachers would receive the extra money, if not personally, at least for the improvement of the technical infrastructures of their chairs. However, this way of proceeding was not the rule. Some faculties decided to allocate the money for library acquisitions, others divided the extra money on an average per chair allocation, and others even turned the economic decision-rule up-side-down by allocating the money among the "bad performers" under the assumption that those professors would then perform better.

In other words, if one introduces monetary incentive structures among faculties based on performance indicators without defining the decision-rules to be applied at the chair/institute level, the whole incentive scheme may lead to "Byzantine" situations that defy the market model.

The second example is related to the definition of a "student" in a system without tuition fees. The German higher education system is still characterized by extremely long study periods for the first degree (about 6.8 years). Many "students" register because of the social benefits they receive without seriously taking courses (probably, around 20-25 percent). As a consequence, the drop-out rate is rather high (about 30 percent and more). Given these circumstances – and everybody agrees, of course, that the situation must be improved – one wonders whether any per student indicator is a meaningful proxy reflecting the internal situation in a higher education institution or system.

Given only two examples, this author fully shares the views expressed by Barbara Kehm, when she summarized the 1999 transition situation of "Higher Education in Germany" in the following way:

> "The ambivalent attitude, that can currently be noted, of many actors in higher education and higher education policy *vis-à-vis* issues of deregulation and differentiation is possibly best explained by the following four factors influencing not only debates and decisions but also actual changes:
>
> *i)* Concepts of market and differentiation continue to be rather unfamiliar to the German higher education system, and most actors have hardly any experience in terms of the respective procedures and processes.
>
> *ii)* There is no consensus concerning the character of indicators on which differentiation could be based.

iii) So far, political actors in the field of higher education have not clearly indicated that they are aiming at renouncing the principles of legal homogeneity and basic equality of all institutions of one type. Furthermore, there are no suggestions in terms of what might happen to the potential losers in a system of competition and differentiation.

iv) The first attempts at institutional profile building currently taking place are still rather timid because no experiences with strategies of self-marketing and of niche-marketing have been accumulated. Possibly, the recent UNESCO World Conference on Higher Education will prompt some large-scale efforts in this respect" (Kehm, 1999).

4. PRELIMINARY CONCLUSIONS

The UNESCO vision of higher education for the Twenty-First Century is a normative statement of a number of goals and priorities. Some of them can be quantified in terms of indicators, because routine statistics on them are already in existence. Others demand further reflection and research in order to identify the appropriate "proxies" for them.

Most higher education systems are in a period of transition from centrally planned state systems to more "deregulated" systems. During this period, which can also be described as a phase full of experiments and contradictions, it is extremely difficult to describe those systems through an appropriate set of indicators.

In order to construct system-level indicators for higher/tertiary education, an analytical framework will be necessary before entering the phase of statistical – technical measurement problems.

In the light of the transformation processes taking place in many countries towards market economies in an increasingly globalizing world, it will be a useful starting point to analyze higher education systems as "market systems" with different degrees of deregulation.

In addition to the construction of institutional and system-level indicators for higher education, not only comparative but also specific regional- and world-level indicators should be developed, which would reflect the increasing degree of globalization in higher education.

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XVII. Suggestions Relative to the Selection of Strategic System-Level Indicators to Review the Development of Higher Education

RICHARD JAMES

1. INTRODUCTION

This study examines the possibilities for selecting a strategic set of indicators for monitoring the system-level development of higher education by UNESCO Member States and their higher education institutions. It draws upon the international and national experiences of quantitative reporting about higher education. It discusses possible criteria for the selection of indicators and presents a preliminary framework of indicators for consideration.

2. PURPOSE OF THIS STUDY

The UNESCO "Strategic Indicators for Higher Education in the Twenty-First Century" project is related to two documents that resulted from the UNESCO World Conference on Higher Education (Paris 5-9 October 1998): *Higher Education in the Twenty-First Century: Vision and Action*, and the *Framework for Priority Action for Change and Development of Higher Education*. (UNESCO, 1998a; UNESCO, 1998b).

The "Strategic Indicators ..." project is being coordinated by UNESCO-CEPES, Bucharest, Romania. The project involves three Invitational Roundtable meetings in 2001-2003, focusing on:

- system-level indicators;
- statistical indicators for the quality assessment of institutions;
- indicators for institutional and programme accreditation.

This study was prepared for the first of these roundtables, titled "System-Level Indicators for Higher/Tertiary Education". Among the expected outcomes of this meeting was the formulation of a short list of strategic indicators. At the request of the meeting organizers, this study attempts to answer two questions:

1. What lessons can be drawn from international and national experiences in order to improve quantitative reporting about the development of higher/tertiary education?
2. What quantitative indicators should be chosen in order to review the system-level development of higher/tertiary education in the context of the "World Declaration" and the "Priority Action Plan"?

The proposed indicators should facilitate further reflection on the development of higher education in the context of the vision postulated in the "World Declaration" and the "Priority Action Plan". The objective of recommending system-level indicators arises from the belief that only through monitoring systemic as well as institutional development can the implementation of the specific recommendations of the World Conference on Higher Education be determined.

3. LESSONS FROM THE EXPERIENCE OF INDICATORS IN HIGHER EDUCATION

There is a considerable theoretical and practical foundation upon which this project can draw. For well over a decade, work has been undertaken to develop reliable and useful indicators for higher education. The Organization for Economic Co-operation and Development (OECD, 1998; Cuenin, 1988; Kells, 1993) has produced cross-national studies on the state of development of performance indicators, and detailed critical analyses have been conducted in the United Kingdom (Cave *et al.*, 1997; Johnes and Taylor, 1991) and other developed nations (McDaniel, 1996). In Australia, there has been extensive quantitative data collection at institutional level based on the work of Linke (1991, 1995).[1] Much of the analytical work has focused on the development of valid and reliable indicators for the purposes of institutional comparison within national systems, even if some universities have engaged in cross-national benchmarking exercises (James, 1999).[2]

The international interest in indicators has arisen because of pressures for both summative and formative evaluation. On the one hand, as higher education systems have expanded towards mass participation, governments have become concerned about university accountability and public transparency and have sought objective measures of the performance of institutions and national systems overall (*e.g.*, Henkel, 1991). On the other hand, the interest in indicators has derived from the quality movement and its discourse of continuous improvement. In the latter case, some of the demand for objective measurement has been driven by the universities themselves in their pursuit of external reference points for charting

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[1] Australia has established a system-wide indicator framework, based on the requirement that institutions annually provide the government with statistical data. The 1998 report by the Department of Education, Training, and Youth Affairs, *The Characteristics and Performance of Higher Education Institutions* (DETYA, 1998) lists a large set of indicators under the titles of broad context, staff, finances, and outcomes. The development of indicators in Australia has occurred over a lengthy period and includes work carried out in 1991 by the Performance Indicators Research Group (1991), to test a broad range of quantitative indicators suitable for evaluating performance in higher education. This effort was followed by the release of two reports (DEET, 1994; DEET, 1996) by the Department of Employment, Education, and Training presenting various indicators for higher education institutions. *The Characteristics and Performance of Higher Education Institutions* is available on-line, at: <http://www.detya.gov.au/archive/highered/otherpub/characteristics.pdf>.

[2] Universitas 21, for example, is a company incorporated in the United Kingdom with a network of eighteen universities in ten countries <http://www.universitas.edu.au>. An initial objective in the formation of the Universitas 21 network was to provide member universities with kindred partners for purposes of international benchmarking.

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corporate development within commercially competitive, market-oriented contexts.

Regardless of whether or not the purposes are accountability or continuous improvement, reliable measurement seems necessary for shaping judgments, policies, and actions. There remain well-known difficulties. These are not, however, entirely insurmountable for the present project as long as the limitations and bluntness of indicators are recognized and the sights of the project are set accordingly. Not all that is valued in higher education is easily measured and reported, and qualitative indicators are necessary for the important aspects of higher education that defy quantification. Even the aspects that can be quantified pose measurement challenges. Owing to the extent of system and institutional differentiation, lengthy lists of qualifications and caveats often accompany the simplest of indicators. In addition, the possible quantitative indicators form a vast matrix: Davis (1996) cited more than 300 possible indicators, while well over 200 indicators are reported annually in Australia (DETYA, 1998).

The Invitational Roundtable was confronted with the formidable task of recommending a small set of indicators which would strike a balance between what is technically robust, valid, and reliable, and what is politically and practically possible and sensible. The recent national and international experience of indicators may help. Although it is a challenge to summarize what has been learned over ten to fifteen years of quantitative reporting of higher education, some key conclusions – or principles, perhaps – do stand out.

1. Indicators that are abstract or based on complex formulae are not easily interpreted – or are misinterpreted – by the various stakeholders with an interest in higher education. Simplicity is a virtue, and indicators should be transparent and have good face-validity.
2. Notwithstanding the value of simplicity, indicators that are excessively crude, have tenuous links to goals, or fail to detect subtle differences and changes over time are of little value and are liable to be disregarded.
3. The most strategically useful results are achieved when an agreed upon framework for data collection and reporting is established. Particularly if comparative analysis is to be undertaken, indicator definition must be precise, and quantitative variables must have adequate psychometric properties.
4. For most policy-related purposes, the number of indicators probably should be kept to a minimum; otherwise, data collection tends to become an end in itself. The experience of benchmarking activities conducted in the business world is that large numbers of numeric indicators create data collection and management issues that distract from analysis and the utilization of findings (Karlof and Ostblum, 1993).

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5. While there are some "simple" or "absolute" indicators (Cave *et al.*, 1997), rarely are indicators neutral or value-free. The creation of indicators establishes a hierarchy of values, and the act of measurement and reporting affects the object of measurement. Selecting indicators attaches privileges to certain goals and functions and, over the long term, may redirect resources accordingly. Whoever chooses indicators in effect determines the "right" direction in which to steer activities. The normative tendency of indicators is valuable in many circumstances, but can act against institutional diversity within systems.
6. Categorization of indicators is helpful in making projects manageable. Most indicators in higher education assume a process or production model representing the university/higher education as a system of inputs, processes, and outputs (Cave *et al.*, 1997: 25-37). The output indicators (*e.g.*, completions and completion rates, levels of satisfaction with courses and teaching, graduate employment rates, and destinations) are generally the most difficult to measure and require considerable subjective interpretation.
7. Raw quantitative data usually require modification before they can convey sufficient meaning to guide policy or actions. The needed modification may involve representation as a dividend (*e.g.*, public expenditure on education as a percent of GDP) or the calculation of a trend over time (*e.g.*, annual percent change in public expenditure as a percentage of GDP).
8. A characteristic of higher education is the lengthy time lag between actions and outcomes in many important areas. This lag creates particular difficulties for quantitative measurement if the purposes are continuous improvement. Analysis of indicators and any action planned as a result should take account of the time horizon for outcomes.
9. The direction of measurement of some indicators is questionable, depending on whether they are assumed to be measures of quality or efficiency. Moreover, the interpretation of certain outcome indicators may benefit from analysis of output quality. If *expenditure per student* is taken as an example, according to one interpretation, high unit cost may be taken as an indicator of a high quality educational process. Low unit cost, on the other hand, might be construed as a measure of efficiency. In either case, any conclusions drawn will be of dubious value, unless data on the quality of educational outcomes is available.
10. Measures of the quality of teaching and research and the value-added effects of higher education are particularly elusive and subject to the effects of reputation. The present performance indicators for teaching quality have alternative conceptual bases, and most have a highly subjective element to them (Cave *et al.*,

1997: 225)[3]. McDaniel (1996) learned – from a large European opinion survey of interest and expert groups – that, of seventeen commonly cited process indicators, only seven were deemed relevant indicators of quality in higher education: *(i)* evaluation by employers of graduates; *(ii)* academic reputation of staff; *(iii)* peer review of curriculum content; *(iv)* employment rate of graduates; *(v)* completion rates; *(vi)* student evaluation of quality; and *(vii)* peer review of teaching processes. One should note that five of these are subjective measures.

11. The question that besets most indicator projects is the following. Having collected data, what to do next? Indicators do not, in themselves, specify the action to take. Action requires interpretation of the meaning of indicators within a broader understanding of the context. Inevitably, there is a comparative dimension to indicator projects, even if it is not explicit. Comparisons are valuable – perhaps indispensable – in informing and guiding policy and action. Comparisons may be of self over time, in regard to targets, or of similar systems or organizations. Since most indicators are heavily dependent on social, political, and economic contexts, comparisons of institutions or of systems must be undertaken cautiously with knowledge of and respect for contextual differences.
12. Once indicator information is available, there is a tendency for it to be used for purposes for which it was not designed. Within the more market-oriented systems, indicators at institutional level provide commercially sensitive information that is of obvious interest to prospective students. System-level indicators may, of course, attract little attention of this kind. The potential misuse of data can be reduced if protocols are established for data handling.
13. Finally, the collection of good data is costly, and adequate resources need to be available and set aside for collection, analysis, and reporting. Generally speaking, institutional co-operation in providing data for system-level indicators is vital because it is feasible to collect certain information only at institutional level.

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[3] The Australian Higher Education system uses the Course Experience Questionnaire (CEQ) (Ramsden, 1991) in an annual survey of graduates to measure the quality of teaching on the basis of a field of study. The instrument has scales measuring good teaching, feedback to students, student workload, generic skill development, and overall satisfaction. The measurement of teaching quality has been controversial and subject to some criticism. A federally funded project has recently recommended the incorporation of new scales into the CEQ to measure additional dimensions of the student experience (McInnis *et al.*, 2001).

4. CONSIDERATIONS IN THE SELECTION OF A STRATEGIC SET OF SYSTEM-LEVEL INDICATORS

The bold objective of the "Strategic Indicators for Higher Education" project is to use indicators to influence higher education development and change in agreed upon directions. If all goes well, the project will contribute to a far-reaching chain of events; that is, the indicators that the project recommends will directly and indirectly:

- reiterate the core elements in the vision articulated in the "World Declaration" and the "Priority Action Plan";
- support improved quantitative reporting of higher education;
- focus attention on the interpretation of indicator data and improve understanding of the conclusions that can be drawn from data;
- encourage and support *informed* policy and action towards the vision.

Deciding upon an indicator framework is complex enough in any setting, but the selection of indicators appropriate at system-level involves particularly complex political, technical, and practical issues.

Looking over the previous list of principles, some immediate conclusions can be drawn. The *Priority Action Plan* suggests system-level action for change and development across the three areas of inputs, processes, and outcomes, and suitable indicators might be chosen accordingly. Although there are many stakeholders in higher education, it is essential to treat policy-makers and administrators as the principal audience, for these people have the authority and the means to encourage and support effective data collection, analysis, and policy-making, at both system and institutional levels. Finally, the normative set of values for choosing the indicators is articulated by the vision for development proposed in the *World Declaration* and the *Priority Action Plan*. For the purposes of the project, these values are non-negotiable, even though some of the assumptions underlying them could be questioned.

Ideally, the indicators should share the virtues listed below. It is highly unlikely, however, that individual indicators will meet each of these requirements.

1. The indicators should be sufficiently provocative and relevant to encourage the commitment of resources to monitoring and action. They should therefore correspond with widely shared national and institutional values and priorities.
2. They should be capable of definition that is meaningful across national and system differences without excessive caveats, and must be applicable in developed nations, developing nations, and less developed nations.
3. They should measure system-level qualities rather than institutional-level qualities; however, they should be sufficiently relevant at institutional level.

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4. They should be easy to interpret for all constituencies.
5. They should be sufficiently detailed to be capable of revealing small developments over time. They must also be stable over time to allow continuity of measurement.

5. ISSUES RAISED AND DISCUSSED AT THE INVITATIONAL ROUNDTABLE

In considering the possibilities for developing a preliminary set of recommendations for presentation to the Roundtable, three issues emerged. These are outlined below, together with the author's personal views regarding each of them.

i. *Are existing data sets capable of adequately representing the vision?* All else being equal, it would be best if the recommended indicator set could be derived directly from readily available sources, or be at least extractable from existing data sets. However, Abercromby and Fielden's (2000) survey of indicators in the context of the "World Declaration" and the "Priority Action Plan" reveals the absence of data in many important areas and tenuous links between goals and existing data in others. If the recommendations of the project were to be limited to available data, the project might fail in its main purpose – that is, to be strategic. It seems unavoidable that the project recommend indicators that would suggest that some, or all, Member States must collect new data.

   This task would be a *highly strategic* step for the project to take, one which corresponds to an objective of assisting Member States and institutions to improve the reporting of higher education through the development of data definitions and collection processes. While cost must clearly be considered, two or three yearly data collection cycles or spot surveys might be appropriate and would allow adequate time for developments to be measured. This area might be an appropriate one in which developed nations could assist less developed nations in data collection.

ii. *What about the aspects of the vision that are not quantifiable?* The task would be more straightforward if all the goals expressed in the vision were quantifiable. However, core elements of the vision are not quantifiable in any acceptable way. One should consider, for example, the commitments to academic freedom and institutional autonomy. The conditions required for these freedoms are exceedingly difficult to quantify. Yet, omitting such values and goals from the framework on the grounds that they can only be assessed qualitatively would seriously damage the relevance of the project and weaken its relationship to the vision. It therefore might be necessary to consider at least a small number of qualitative indicators requiring subjective measurement and reporting. Depending on the circumstances, it might be feasible to use three- or five-point scales (*e.g.* low/moderate/high or item-specific terminology). One should note

that the OECD (1998) reports the locus of educational decision-making by mode of decision-making using subjective survey data.

iii. *How can the project support the appropriate and effective interpretation of indicators?* In addition to the specification of indicators, the project might benefit from considering the development of a support framework that includes recommendations for indicator interpretation within systems and institutions. Usually, it is helpful to suggest how an indicator might be interpreted and used. It would also be helpful to indicate how an indicator should not be used. In this regard, the implicit comparative dimension of the project requires further consideration. Arguably, an indicator is only useful if it allows development to be charted over time or benchmarking against comparable systems/organizations. At the least, the project assumes comparison against itself over time. It is anticipated that Member States will monitor their development by looking for trends in their own indicator data. A potentially valuable additional outcome would be a framework for appropriate comparison with *like* partners. With appropriate support to qualitative investigation and analysis, comparison of this kind might identify particularly effective policies and actions. Any comparative work must of course acknowledge contextual differences. Expertise in comparative analysis would only be developed over a considerable period of time.

6. SOME PRELIMINARY SUGGESTIONS

A preliminary attempt to select a small set of system-level indicators follows. The approach taken is described below.

The "Priority Action Plan" establishes well over sixty goals. As a first step in proposing a small and strategic set of indicators, it was necessary to distill the central values and priorities that relate to system-level action.[4] This task involved some reduction and condensation of the numerous priorities outlined in the plan and some unavoidable losses of subtlety. In so doing, however, it became clear that the goals implied in the *Priority Action Plan* are rarely discrete: they are often closely interrelated or overlapping. Furthermore, each goal may require multiple actions and some actions will affect a number of goals: the goal-action relationship is many-to-many. (Implying that the value of the indicators will derive from the *set overall* rather than from individual indicators in isolation.)

This initial "pruning" exercise isolated four priority areas for system-level development in higher education, each with sub-categories, which reflect the areas in the *Priority Action Plan* for which indicators would be desirable.

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[4] There is of course considerable overlap between system-level and institutional-level indicators. However, institutional-level indicators are largely a subset of system-level indicators. Consequently, not all system-level indicators are appropriate at institutional level; however, most, if not all, institutional-level indicators might be relevant at system level, or have close counterparts at system level.

Table 1 presents the four areas as a condensed framework for the *Priority Action Plan*.

Table 1. Condensed framework for the UNESCO *Priority Action Plan*

Indicators of an enabling policy and policy-making framework
1.1 Accountable policy and decision-making framework: national and institutional
1.2 Clear policies for higher education academic staff
1.3 Promotion and development of research
1.4 Conditions for freedom and autonomy (institutional, academic, student)
Indicators of the commitment of resources
2.1 Fulfilled commitment of resources to higher education
2.2 Increased co-operation among countries with regard to higher education and research, especially to reduce a widening gap between industrially developed and developing nations
2.3 Use of new technologies
Indicators of appropriate levels of participation, access, and retention
3.1 Expansion of access
3.2 Equity of access
3.3 Provision of student support
Indicators of economic and social outcomes
4.1 Links between higher education, industry, and graduate employment
4.2 Promotion of international mobility
4.3 Catalytic effects on education systems overall and on local, regional, and national development

Source: The author.

Tables 2, 3, 4, and 5, on the pages that follow, present the sub-categories of each of these areas and list the elements of the "Priority Action Plan" to which each sub-category relates.

The tables also include (very) tentative suggestions for indicators. Wherever there are obvious gaps, they are highlighted. The gaps occur for priorities that are strongly process-oriented and where the existence of processes and outcomes are difficult to quantify. No attempt has been made at this stage to offer precise data definitions.

Table 2. Indicators of an enabling policy and of a policy-making framework

Actions/Goals	Possible indicators from which to choose
Accountable policy and decision-making frameworks, national and institutional 1(h) – involvement of all relevant stakeholders 1(i) – enhancement women's involvement in decision-making 1(k)- involvement of students in [institutional] policy decisions 6(g) - high quality, internal and external [institutional] evaluation	*These actions/goals are highly subjective and not easily specified quantitatively*

Actions/Goals	Possible indicators from which to choose
Clear policies for higher education teachers 1(j)- clear policies concerning higher education teachers 6 (d) – participation [of all academic staff] in teaching, research	Academic salaries (adjusted using OECD Purchasing Power Parity data) Percent of staff time spent on R&D Percent of staff time spent on teaching Percent of academic staff holding doctorates (Opportunities for professional development, performance review?)
Promotion and development of research 1(b) – reinforcement of links between higher education and research 1(e) - close links between higher education and research institutions 6(i) - promotion and development of research [in] all higher education disciplines	Expenditure on R&D in higher education overall and by discipline as a percentage of overall national expenditure on R&D Research higher degree students as a percentage of all students Percentage of staff time spent on R&D Expenditure (adjusted using OECD PPP data) on R&D per academic staff member Proportion of academic staff involved in research Proportion of higher education R&D financed by private enterprise

Source: The author.

Table 3. Indicators of the commitment of resources

Actions/Goals	Possible indicators from which to choose
2.1 Resource commitment to higher education 1(g) - commitment of human, material and financial resources	Higher education funding overall and by source, public or private, as percent of GDP Resources (total public and private) per full-time student equivalent (adjusted using OECD PPP data) Expenditure on teaching as a percentage of overall expenditure
Increased co-operation between countries with regard to higher education and research, especially to reduce the widening gap between industrially developed and developing nations 4 – increasing co-operation between all countries at all levels of economic development 4 – reduce widening gaps between industrially developed and developing countries	??
Use of new technologies 8 – use of new technologies being generalized to the greatest extent possible to help higher education institutions	Percent of higher education course time using information/communications technologies

Source: The author.

Table 4. Indicators of appropriate levels of participation, access, and retention

Actions/goals	Possible indicators from which to choose
3.1 Expansion of access 2 – [where necessary] diversifying and expanding access 1(d) – choice and flexibility of entry and exit points 1(d) – lifelong learning	Students (domestic) overall and by discipline, per 100,000 of the population Percentage of students 25 years old and over (commencing domestic students) Basis of admission
3. 2 Equity of access 1(a) – accessible to all on basis of merit 1(i) – consolidation of women's participation 3 – creation of gateways ... especially for older students	Ratio of higher education participation to the proportion of students of lower socio-economic background to proportion of people of lower socio-economic background in the population Percentage of first-generation higher education students, among commencing students Ratio of men to women, among commencing domestic students Women enrolled in research higher degree programmes as a percentage of all students enrolled in research higher degree programmes Percentage of students enrolled part-time
3.3 Provision of student support 6(k) – forms of student support, including measures to improve student living conditions	First-year retention rates Student (all)/teaching staff ratio Student (all)/all staff ratio

Source: The author.

Table 5. Indicators of economic and social outcomes

Actions/Goals	Possible indicators from which to choose
Links between higher education, industry, and graduate employment 7 - closer links between higher education and the world of work	Graduate employment rates: two-years-out, overall, and by discipline
Promotion of international mobility 1(m) – facilitation of international and national mobility of staff and students	International students as a percentage of all students Percentage of academic staff members with highest qualification awarded overseas
Catalytic effects, on education systems overall and on local, regional, and national development 1(c) – catalyst for entire education system 1(f) – contribution to local, regional, and national development	Total expenditure on education overall and by level as a percentage of GDP Participation rates in education by level

Source: The author.

Table 6 comments on the possible utility of certain quantitative indicators. Table 7 lists the approximate data requirements for the indicators listed.

Some of the possible indicators are simple proxies for the action/goal in question. Admittedly some are at a considerable conceptual distance from the outcome they might represent, raising concerns about face validity.

Table 6. Notes regarding the possible quantitative indicators listed

- The participation rates of socio-economic subgroups are notoriously difficult to measure. The usual socio-economic data are income, employment type, and level of education. For purposes of higher education access, parental educational level is a useful measure of "first generation" access.
- Data on *commencing* students is more sensitive in detecting the effects of changes and developments than data on *all* students.
- Discipline and level (*e.g.*, participation in research-oriented higher degrees) best gauge the participation of women.
- Research consistently shows that the first year of study is a critical time for retention. First year retention rates serve as a proxy for the range and quality of student support services.
- To measure the promotion and development of research, expenditure on R&D in higher education is best presented *by discipline* as well as an overall aggregate.
- *Research-oriented higher degree students as a percentage of all students* is a good indicator of the level of R&D; however, disciplinary variations need to be considered.
- To gain an accurate picture of graduate outcomes (employment rates and destinations), measurement needs to take place at least one year, possibly two years after graduation. The reporting of outcomes by broad discipline is valuable.
- Along with age, *basis of admission* is a good indicator of access/lifelong learning.
- Crude currency data (*e.g.*, academic salaries) should be adjusted using OECD Purchasing Power Parity data.

Some consideration must be given to whether or not the indicators should attempt to measure outcomes or the existence of actions to produce outcomes. An emphasis on direct measurement of outcomes is not always possible but perhaps highly preferable.

There are two reasons for such emphasis. First, outcomes are more likely to be quantifiable. Second, the relationship between actions and outcomes can be obscure, and cause-effect relationships may vary across social and cultural contexts. In the end, what is most important perhaps is evidence of development in the preferred direction, where necessary, rather than how the development is achieved.

Electronic technology will continue to have far-reaching effects in higher education. There are obviously sharp differences between usage and purposes in developed and developing nations; however, the use of educational technology is an indicator of modernization and (possibly) of the effectiveness of access and of quality of learning. The suggested "percent of course time using technology" is clumsy, but would better reflect the penetration of information technology into the curriculum than a simple volume-of-hardware indicator.

The internationalization of higher education proceeds apace, and this trend, coupled with the electronic delivery of courses, will significantly affect many indicators in the future. Notable in the context of the likely impact on the utility of system-level indicators are international course franchising

and cross-national enrollments in on-line delivery. The United States is already a major provider of full on-line courses. Various international consortia are rapidly forming. These are indications that these developments will grow for at least the next decade. The new patterns of international enrollment are not yet well understood, yet they will seriously confuse the interpretation of certain system-level indicators in the future.

Table 7. Approximate data requirements for the indicators listed

Domestic students (all and commencing)
Number overall
by sex
by age
by SES (parental education level?)
by field of study
by enrollment type (full-time/part-time)
by level of study (undergraduate/postgraduate)
by type of study (research/coursework)
Basis of admission
International students
Number overall
by field of study
by level of study (undergraduate/postgraduate)
by type of study (research/coursework)
First year retention rate
Staff
Number overall
by sex
by field
by location of highest academic qualification
percentage of time allocated to teaching, research, and service
Academic salaries
Course time using information/communications technologies
Graduate employment rates two-years-out
Resources
Revenue by source (public and private)
Expenditure (on teaching and on R&D)
R&D financed by private enterprises

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February 2003

Printed by Editura Enciclopedică
Bucharest, Romania

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